FEMISE RESEARCH PROGRAMME

2010-2011

Analyzing the Immigration-Induced Changes in Product Diversity and Trade Patterns: The Case of the EU-Mediterranean-Eastern Europe Zone

Research n°FEM34-30
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February 2013

Ce rapport a été réalisé avec le soutien financier de l'Union Européenne au travers du Femise. Le contenu du rapport relève de la seule responsabilité des auteurs et ne peut en aucun cas être considéré comme reflétant l'opinion de l'Union Européenne.

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Analyzing the Immigration-Induced Changes in Product Diversity and Trade Patterns: The Case of the EU-Mediterranean-Eastern Europe Zone[•]

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Executive Summary

In this report, firstly, the institutional framework that governs and facilitates the factor (labor force) movement and trade of goods between the EU and Mediterranean countries are assessed. Secondly, empirical analyses are carried out to analyze the impact of migration on bilateral trade between the EU and Mediterranean countries and on product diversity in the EU. Immigrants are grouped with respect to their origin as Mediterranean and Eastern European countries. Trade analyses cover both industry-level bilateral exports and imports and product diversity is measured by focusing both on industry-level employment and number of enterprises.

The empirical evidence tells that migration and international trade are complementary to each other rather than substitutes. Almost in all cases a positive correlation between migration and both exports and imports is found. This outcome also supports and accepts the "information bridge hypothesis" which boosts trade via lowering transaction costs. The empirical evidence found on the relationship between migration and product diversity in some industries is not as strong as the one between international trade and migration. Therefore, the evidence on existence of "transplanted home bias" that boosts imports from the origin countries and motivates production in some industries in host countries, is very vague.

From the above perspective, the development of Euro-Mediterranean relationships initiated in Barcelona in 1995 has already generated a number of positive results to be consolidated for future policies. Along with immigration issue, regional integration and the integration of Mediterranean countries towards the EU to reap the potential benefits of globalization and free trade is still an important issue to tackle.

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1. Introduction, research issue and literature review

Background

Immigration is at the forefront of the European Union's (EU) attention as the immigrant population in the EU is significantly large[1]. At the end of the 1990s, 3.5% of the population (18 million) in the EU was of immigrant origin (Aubarell and Aragall, 2005). Those people were mainly from the Mediterranean and the Middle East and North Africa (MENA). In about a decade, this number has almost doubled. According to the *News Release* by EUROSTAT (2010) — the statistical office of the EU — at the end of 2008, there were 31.9 million foreign citizens living in the EU, of which 20 million were citizens of countries outside the EU. The share of the EU population that is foreign born is currently estimated at around 10 per cent; see EMPL (2011). Not surprisingly, the most populated five EU Member States (Germany, France, Italy, Spain, and the United Kingdom) — comprising approximately two-thirds of the total EU population — have the highest numbers of foreign-born persons, in absolute terms, the total number corresponding to over 75 per cent of the total immigrant population in the EU; see EUROSTAT (2011a). The South and East Mediterranean (SEM) countries today have an aggregate emigrant population of some 12.7 million, 64% (8.2 million) of which are just in the European Union (EU) (CARIM, 2009). Therefore, the empirical motivation of our paper is obvious as statistical evidence shows that the immigrant population in the EU is significantly large.

International Migration

The theoretical literature on international migration provides two main approaches, the neoclassical approach and the new economics of migration, that seek to explain the migration decision of people[2]. According to the neoclassical approach, economic opportunities in a country (e.g., higher wages) lead an individual to migrate to that country so as to maximize his/her utility. The neoclassical approach assumes that individuals are rational and have perfect information and migration is costless. Also, there is full employment and no uncertainty about the future. The neoclassical theory of international

[1] FEMISE Research Report FEM32-06, for example, concludes that migration flows are to be a key determinant of the demographic evolution in the next decades, and such flows will originate in the South.
[2] Other approaches are variants of these two approaches as Vogler and Rotte (2000) states.

trade notes that, under some restrictive assumptions (e.g. perfectly functioning markets, absence of transaction costs regarding exchange of goods and services and mobility of resources, etc.), economic integration in the form of increased movements of goods and services and of production factors will lead to the equalization of factor prices. To this end, trade in goods and the movement of factors of production are substitutes if factor prices equalize following trade liberalization. There exist, however, market imperfections and transaction costs as well as impediments to the international mobility of factors of production. In addition, technology differs across countries, and large economies may pay higher wages due to scale economies. Provided that factor prices fail to equalize following trade, migration may be boosted by trade liberalization. Apparently neoclassical view approaches to immigrants as labor force and therefore focuses on the supply side of the economy whereas the new economics of migration, the second approach, focuses more on the demand side of the issue.

Remittances are at the core of the second approach, the new economics of migration, which considers households (not individuals) as the decision-makers. According to the new economics of migration, households diversify risks by sending a family member to a foreign country so as to reduce the family's dependence on the situation in a single market. In general, remittances from an emigrant are seen as the primary income of the household. This type of risk diversification is relevant in countries where public social security is inadequate and where private capital markets are not well functioning (Vogler and Rotte 2000). If trade liberalization is not accompanied by capital market liberalization, it appears that households may find this type of risk diversification more appropriate even in the long-term. Financially integrated markets are predicted to allow less advanced countries to utilize resources better and to access capital at lower cost especially through foreign direct investment (FDI as well as through other international capital flows such as remittances sent by migrants[3]. In the short- and medium-term, remittances are mainly used for consumption purposes. To channel remittances, however, into productive investments so as to finance the development of the

[3] Some €7.1 billion is officially transferred each year from Europe to eight Mediterranean countries (between €12 and €14 billion including informal transfers). These remittances from Europe therefore far exceed total flows of net foreign direct investment (US$6.4 billion a year, 2000-2003) and official development assistance (US$4.3 billion a year, 2000-2003) received by these countries; see EIB: www.eib.org/publications.

recipient country's economy, well functioning financial intermediaries are necessary that may be achieved in the long-term by the deepening of financial markets.

From the above perspective we believe that an analysis of immigration where the immigrants are taken as only labor suppliers would yield misleading results in terms of the conclusions on economic impacts of immigration. In order to obtain more accurate results, one should take into consideration the fact that immigrants are economic agents that supply labor force in labor market and also demand good and services as consumers[4].

International Trade

The traditional approach on how immigration affects trade was based on the effects of immigration on factor supplies in the home and host countries, whereby the change in factor supply due to immigration affects production and ultimately trade flows (Bandyopadhyay et. al (2008). Following Gould (1994), it has widely been accepted that the relationship between immigration and international trade is much more complex, and there are other mechanisms through which immigration can stimulate trade between the host and home countries.

It is postulated that the immigrant-trade relationship operates through two broad channels. First, migrants are expected to stimulate trade by lowering transaction costs. This is because immigrants have superior knowledge of home country markets, languages, business practices, laws and other matters related to trade. This channel has been referred to as the "information bridge hypothesis" (Dunlevy, 2006). The immigrants' knowledge basically overcomes information asymmetries associated with cultural differences. Also, immigrants may arrive with established connections to home country business networks. These networks can be conduits of information, and can deter opportunistic behavior. Second, immigrants might find that certain goods they are used to consuming in their home country are not available in the host country, and boost imports of such commodities from their home country to the host country. These immigrant preference effects have been referred to as "transplanted home bias" effect by White (2007).

[4] Very recently Mazzolari and Neumark (2009) consider the "consumer side" of immigrants in order to evaluate the effect of immigration.

Product Diversity

In general, people move across countries for several reasons. In particular, employment-related reasons are reported as the main motive behind immigration, although migrants tend to have low levels of income, and/or are exposed to a higher risk of unemployment[5], or are likely to be employed in jobs below their educational qualifications[6]. These factors may also explain, to some extent, the sectoral distribution of immigrants in the EU Member States.

According to the EU-LFS 2009 data reported by EMPL (2011), immigrants are, generally, under-represented in occupations (i) that require proficiency in the host country language such as office works as they cannot compete with a larger group of native speakers, and (ii) that require high skills/education as in extra-territorial organizations, and education and health sectors, etc. Also they are not well represented in manufacturing, and wholesale and retail trade industries, although there is considerable heterogeneity across countries. On the contrary, they are over-represented in occupations (i) whose demand for skill is sufficiently low such as service sector industries (e.g., hotel and food services, and administrative and support service activities, etc.), and (ii) where the employer is the household (i.e., the household sector that consists in domestic helpers, cleaners and launderers, and personal care workers). Also they are well represented in the construction sector, although as in manufacturing, and wholesale and retail trade industries, the share of immigrant employment in the construction sector shows significant heterogeneity across countries.[7]

Immigrants not only bring in their knowledge of producing some diversified goods, or make trading such goods possible/less costly, but also they may create significant demand for such goods. So we may eventually see some immigration-triggered changes in consumption and production patterns, especially in countries receiving sufficiently large numbers of foreign-born persons.

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5 Irrespective of the level of education, the unemployment rates of foreign-born persons were systematically higher than for native-born persons, and especially in 2008, this was true in almost all Member States for which data were available (EUROSTAT 2011: 41).

6 There are some important factors contributing to immigrants' such employment experiences, such as the non-recognition of migrants' qualifications and skills which are earned abroad, language barriers, or discrimination, etc.; see EUROSTAT (2011a) and EMPL (2011) for details.

7 For a detailed analysis of the sectoral distribution of the share of immigrant employment, see EMPL (2011).

Research Issue

In this study, the impact of migration to the European Union on international trade patterns and product diversity of the Union countries are analyzed. We focus on Southern Mediterranean and Eastern Europe countries as the migration originating regions. We approach to immigrants as consumers rather than sole labor force. We analyze how their demand affects current export, import patterns and diversity of production. We investigate trade by aggregate exports and imports separately and by industry-level exports and imports; and product diversity by industry-level number of establishment and employment. In addition to these, explaining the current institutional structure in the EU that facilitates international trade with the Mediterranean and Eastern European countries is the other issue handled in this study. Based on the empirical findings and current institutional structure the sort of institutional reform needed to facilitate more trade and to increase product diversity is searched.

Although there has been a considerable amount of research about the economic effects of immigration, particularly on the labor market in the European Union (for example, Caroleo and Pastero (2010), Kahanec and Zimmermann (2010), and Kogan (2007)), the effect of immigration on trade has a little bit been ignored in the empirical analyses of the economic effects of immigration. A growing number of studies have examined the effects of immigration on trade flows for U.S. and other countries since the pioneering studies of Gould (1994) and Head and Ries (1998). All of these studies find a positive relationship between immigration and trade (exports or imports, or both) regardless of the different samples, specifications, and estimation methods they used. It is important that a similar empirical analysis is applied to the Euro-Mediterranean and Euro-Eastern Europe region to determine how immigration has affected trade among the countries in the region.

Therefore on the "trade" front, this study utilizes data on trade and immigrant population in the European Union nations to test the hypothesis that a greater stock of immigrants in the host country (the EU), from the home country diversified by region (MPC and Eastern Europe (EE) countries) leads to more trade (diversified by industry) between the two countries.

The other area on which only little worked has been carried out so far is how immigration changes product diversity. This diversity effect can arise for two reasons. First, immigrants consume and hence increase demand for “ethnic” goods, parallel to what White (2007) puts forward about preferences. Second, they may have a comparative advantage in producing ethnic goods, hence increasing the supply of these goods. The increased diversity of goods in the product market generated by immigration may then lead to welfare improvements for natives that have relatively stronger preferences for ethnic goods.

On the "product diversity" front, we search mainly the demand-related impact of the influx of immigrants diversified by originating regions on the variety of consumption goods available in the host countries reflected by product diversity (number of establishments and employment by industry).

In addition, the two main aim namely migration-induced trade and migration-induced product diversity may reveal information regarding the substitutability/complementarity of the industries in domestic market. The research also puts emphasis on how the current institutional structure in the EU facilitates international trade with the MPCs and EE countries; what sort of institutional reform is needed to facilitate more trade and to increase product diversity if these are found to create mutual benefits.

Review of Empirical Literature

The gravity model of bilateral trade, first introduced by Tinbergen (1962) and Pöyhönen (1963), has withstood the test of time and remains the most popular model to explain international trade patterns. It has been accepted as being "extremely successful empirically" in their ability to explain variance in bilateral trade volumes (Deardorff 1984) and as have "produced some of the clearest and most robust empirical findings in economics" (Leamer and Levinsohn 1995). Although the gravity model has had a huge empirical success for a long time, a theoretical foundation in economics was not provided until Anderson (1979) derived the gravity equation from a model that assumed product differentiation. Bergstrand (1985, 1989) then associated the gravity equation with simple monopolistic competition. Helpman and Krugman (1985) justified the gravity model in a differentiated product framework with increasing returns to scale. Deardoff (1998) has shown that the gravity model characterizes many models and can be justified from standard trade theories. Anderson and van Wincoop (2003) derived an operational gravity model from a CES expenditure system. Helpman et al. (2008) has recently generalized their model by accounting for firm heterogeneity and fixed trade costs, and also for asymmetries between the volume of exports from j to i and the volume of exports from i to j.

Empirical evidence from this literature, which mainly employs gravity-based estimation techniques, suggests that immigration has indeed a significant positive effect on both exports and imports, and the effect appears to be stronger for imports and for specialized/differentiated goods.[8] This latter finding implies that immigrants may also change the number of varieties of goods available in the host country, especially through their demand/consumption patterns. [9]

There is a relatively large literature that considers the two-way interaction between international trade and international migration (reviewed in e.g. Poot and Strutt 2010, White 2010, and White and Tadesse 2011). Of the studies that focus on the impact of migration on trade, most suggest that migration increases bilateral trade. The trade facilitation literature makes it clear that the costs of international trade are not only determined by factors such as geographical distance and physical infrastructures, but that there are also other fixed costs, for example the cost of obtaining general skills in trading, specific knowledge of the foreign markets, foreign language ability, trust etc. The employment of immigrants may reduce such costs.

Migrants can also affect international trade through the consumption (imports) channel, because immigrants have preferences in favor of the products of their country of birth, and their incomes in the host country give them sufficient purchasing power to afford those goods. Moreover, the presence of foreign-born entrepreneurs may boost the availability of such goods (Bratti et al., 2011). However, migration may also create incentives for domestic firms to produce relevant substitutes (see e.g. Dunlevy and Hutchinson 1999, Girma and Yu 2002).

The range of estimates that were obtained from the primary studies suggests a great degree of heterogeneity across studies. While the vast majority of export and import elasticity measures are positive, for some countries some negative elasticity measures have been obtained. The most negative elasticity of exports is obtained for the US (-0.14). The largest positive elasticity can be found among estimates for Australia and the EU, 0.65 in both cases. For imports, the most negative elasticity is again obtained for the US, -0.18, and the largest positive one for Portugal, 0.56. The mean elasticity for the effect of immigration on exports is positive for all countries except in the study that uses US/Canada regional trade data (Helliwell, 1997). The

8 See Wagner *et al.* (2002), Peri and Requena-Silvente (2010), and Gaston and Nelson (2011), and references therein, for surveys and discussions of the main findings of this literature.

9 This preference effect is referred to as the *transplanted home bias* effect as migrants develop tastes before migrating to a country, and as such tastes affect their consumption patterns in the country they immigrate.

largest mean immigration elasticity of exports is 0.43 (Australia). The mean elasticity of imports is also positive for all countries except Greece and Italy, with the largest in magnitude for Portugal namely, 0.35.

It should be noted that conventional neoclassical trade theory (like Heckscher-Ohlin) predicts that migration and trade are substitutes but the empirical evidence summarized her suggests that complementarities between migration and trade dominate (see also e.g. Nana and Poot 1996; Gaston and Nelson 2011; Bowen and Pédussel-Wu 2011). In any case, the growth in both trade and migration in recent decades suggests that the traditional theory of trade probably cannot accurately capture the complete relationship between migration and trade (Lewer and Van den Berg, 2009).

There is an extensive literature studying potential impacts of immigration in different contexts. One strand of this literature, for example, focuses on the labor-market consequences of immigration, such as whether immigration leads to higher unemployment among natives, especially by crowding out native workers, and whether immigration decreases wages/earnings of native workers. Although the vast majority of research has mainly analyzed the United States (US)[10], there is a growing and recent literature studying different EU Member States.[11] Much of this literature is indirectly related to our study as we particularly focus on the immigration-induced changes in diversity of consumption choices. It is, however, worth noting that, as far as the EU Member States are concerned, in most cases, immigrants do not crowd out native workers — since they mostly complement natives in the labor market — nor do they have a significant negative impact on native workers' wages/earnings, which may have indirectly affected consumption choices; see Kerr and Kerr (2011), Münz *et al.* (2007), ILO (2010), UNECE (2002), and references therein, for details. To the contrary, migrant workers contribute to job creation in several ways, ranging from entrepreneurship to increasing domestic demand for goods and services (ILO 2010: 60).

Immigrants generally create social networks in the country that they have settled (OECD 2007). Such networks enable immigrants to opt for self-employment, and so to establish micro,

10 See Hanson (2009) for discussions of this literature.
11 A survey of the main findings of such studies can be found in UNECE (2002), the United Nations Economic Commission for Europe.

small, or even medium-sized enterprises,[12,13] which are mostly found in the catering industry, services, and retail trade. Immigrant entrepreneurs that are active in such sectors often provide goods and services that are different from those provided by native entrepreneurs, implying that they may well contribute to the diversity of consumption choices (SEC 2006, EMN 2005, and ILO 2010). Immigrants may also play a crucial role in facilitating trade through a number of mechanisms as they are linked to both their home and host countries by networks; see Gaston and Nelson (2011), Globerman (1995), and Head and Ries (1998) for details. As argued by Head and Ries (1998), immigrants may have superior knowledge of market opportunities, and so in the presence of transaction costs, they may act as trade intermediaries, and may reduce costs, especially associated with foreign trade.[14] Such costs tend to be significantly high, especially when economic, cultural, and institutional differences across countries are significant, and when such countries trade specialized and/or differentiated goods. Therefore, immigrants may positively affect trading differentiated goods, which may lead to increased variety of consumption goods in the host country.

Another strand of literature (probably quite limited in number) focuses on how the composition of businesses is linked to the share of immigrants in the total population. Mazzolari and Neumark (2011) studies the impact of immigration on the diversity of consumption choices. In particular, they try to explain the changes in the number of establishments of different sizes with the changes in the share of immigrants in the total population. They use establishment-level data for California between 1992 and 2002, and focus on the retail sector and the restaurant sector, the latter of which is given a special emphasis. They find that immigration is associated with fewer stand-alone retail stores, and a greater number of chains/big-box retailers, which appears to be contradicting with the diversity-enhancing effect of immigration. To the contrary,

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12 According to the European Commission (EC) publication, SEC (2006), in Italy, there are some 168,000 such enterprises. In Belgium, in the Brussels area alone, self-employed persons originating from ethnic minority communities are estimated at around 18,000, while for the Flemish region, the number is estimated at about 10,000. In Germany, in 2003, there were 142,000 self-employed non-EU citizens, and in Netherlands, in 2004, 58,000 ethnic entrepreneurs were recorded (p.17).

13 Among different motives, *immigrant entrepreneurship* is a way to circumvent unemployment, especially given their difficulties in finding paid-employment via formal routes; see e.g., van Delft *et al.* (2000), Constant *et al.* (2005), EMN (2005), and OECD (2007).

14 This is referred to as the *information bridge hypothesis*, according to which immigrants may have superior knowledge of both the home and host country markets, languages, business practices, laws, and special distribution channels, etc., that may help overcome uncertainty stemming from economic and cultural differences, and differences in political environments across countries. Also immigrants may help reduce economic inefficiencies, which may arise especially due to asymmetric information and incomplete enforcement of contracts; see Dunlevy (2006), and Gaston and Nelson (2011).

Olney (2011) argues that the relationship between immigration and the number and size of establishments is mainly driven by firms' relocating their production activities, rather than by immigrants' consumption patterns. He uses a data set that covers 192 U.S. Metropolitan Statistical Areas for the period 1998-2004, and shows that firms respond to immigration both at the extensive margin, which is captured by the net birth rate of establishments, and at the intensive margin, which is captured by the net expansion rate of establishments. According to his results, both the net birth rate and the net expansion rate of establishments increase, especially with low-skilled immigration, the impact of which appears to be much weaker in the non-mobile industries, such as agriculture, mining, and retail trade, than in the mobile industries, such as manufacturing, and finance, professional, management, and administration services. That being said, his data do not allow for calculating immigration by industry, which may have been crucial for an analysis focusing on the production-related effects of immigration in different industries as immigrants are not well represented in those so-called mobile sectors.

Lach (2007), by using store-level price data, finds a large and significant reduction in prices following the unexpected arrival of a large number of immigrants from the former Soviet Union in Israel during 1990. If interpreted as demand-side effects, Lach's results are consistent with new consumers having higher measures of price elasticity and lower search costs than the native population, and with composition effects (the arrival of consumers with different characteristics) offsetting effects on the level of demand (the increase in the number of consumers). Bodvarsson et al. (2008) analyze the effects of the inflow of Cuban immigrants into Miami after the Mariel Boatlift of 1980. They find a positive and significant impact of immigrant inflows on retail sales per capita, and interpret their findings as evidence of positive consumer demand effects. Finally, Bodvarsson and Van den Berg's (2006) study of Hispanic immigration to Dawson County, Nebraska – a uniquely-segmented economy where immigrants work exclusively in an export sector (the meatpacking industry) but consume locally – also suggests that immigration can substantially boost local consumer demand. Evidence consistent with the existence of immigration-induced product demand shifts is also available for the United Kingdom, where Frattini (2009) finds that immigrant inflows between 1995 and 2006 increased the price of low-value and everyday grocery goods – a result interpreted as stemming from demand side effects. Saiz (2007) and Cortes (2008) also study the effects of immigration on prices, but with a different focus. Saiz studies immigrants' demand for housing and subsequent changes in housing rents, while Cortes studies how immigration changes the price of domestically-produced products through declines in labor costs.

2. Institutional Aspects

European countries has needed certain level of qualified immigration especially starting from mid-1950s however approximately by mid-1990s, big amount of refugee immigration flow has created serious challenges on immigration policies resulting in restrictive policies at both national and EU level. This has created a "threat" for balancing intergovernmentalist and supranationalist logic of integration. Articulations between restriction and expansion, between inclusion and exclusion of migrants and between intergovernmentalism and supranationalism have characterized European immigration policies for over 30 years. Since the early cooperation on immigration until today, the underlining principles of European migration policy have been the liberalization of migration inside the Union through freedom of movement, and safeguarding of control over migration from outside the Union (Shafagatov and Mirzayeva, 2005, p.36).

As Chart 1 states that in time, Maastricht Treaty in 1992 and Amsterdam Treaty signed in 1997 but came in to force in 1999, and post-Amsterdam generated different institutional settings in the EU (The Commission, European Council, European Parliament (EP), European Court of Justice (ECJ)). While Maastricht Treaty provided dominant power for ECJ and limited power for The Commission, Amsterdam Treaty had a greater role for supranational institutions of Commission, EP and ECJ. Post-Amsterdam period increasingly associated with the activeness of EU institutions, especially Commissions in trying to take crucial role in shaping the preferences of member states, in constructing EU level policies (Shafagatov and Mirzayeva, 2005, p.33-34, 36).

In today's Europe without internal borders, managing immigration in a coordinated manner is of utmost importance. Since 1999, the EU has been seeking to do this under the auspices of the Treaty establishing the European Community (now under the Treaty on the Functioning of the European Union)[15]. However, the Commission deems that achievements to date have not been sufficient. A Europe-wide common policy is needed to provide a framework for coherent action. A vision for this policy was presented within the Commission communication "Towards a Common Immigration Policy" on 5 December 2007. Subsequently, the European Council confirmed the importance of developing a common policy and requested that the Commission submit proposals in 2008 (Europa Institute, May 2011, p.6). Thus, the final

[15] Femise report (2007-2008) written by Lorca and De Larce enables more detail background for immigration policies of the EU until 2008.

revised version of “the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions of 17 June 2008 – A Common Immigration Policy for Europe: Principles, actions and tools (COM(2008) 359)” states that the common European immigration policy needs to provide a flexible framework that takes into account EU countries’ particular situations and is implemented in partnership between the EU countries and institutions.

Chart 1: Evaluation of Immigration Policy Competences of EU Institutions

	Pre-Maastricht	**Post-Maastricht Third Pillar**	**Post-Amsterdam First Pillar (*Communitarized* areas of former Third Pillar)**	
			1999-2004	**Post-2004**
Asylum, Immigration, External Borders	Domestic policy-making giving way to intergovernmental cooperation *outside* the Community framework	Third Pillar, Title VI, Article K of TEU	Article 73 of Amsterdam Treaty	
European Parliament	No role	Limited role	Consultation for the first five years after Amsterdam Treaty takes effect, co-decision afterwards	
European Court of Justice	No jurisdiction	No jurisdiction	Referral for an obligatory first ruling for national last-instance courts	
Decision-making	Intergovernmental negotiations Nonbinding decisions in the form of resolutions Binding decisions in the form of treaties	*Unanimity* rule on all issues	Council acts *unanimously* on proposals from Commission and member states for the first five years	Council will act unanimously on a move towards *qualified majority voting* (with no need for national ratification of this decision)
Commission's Right of Initiative	None Occasional observer status at intergovernmental meetings	*Shared* right of initiative for the Commission and Member States	Commission has shared right of initiative (member states have encouraged the Commission to assume an exclusive right for asylum issues)	Commission has *exclusive* right of initiative in Title IIIa

Source: Ucarer, E. M. *From the Sidelines to Center Stage: Sidekick No More? The European Commission in Justice and Home Affairs* http://eiop.or.at/eiop/texte/2001-005t.htm#(I)

Shafagatov and Mirzayeva, 2005, p.35.

This communication comprises 10 principles on which the common policy will be built upon and the necessary actions for implementing these principles. They aim at ensuring that legal immigration contributes to EU's socio-economic development, EU countries' acts are coordinated, cooperation with non-EU countries is developed further and illegal immigration and trafficking in human beings are tackled effectively (Europa Institute, May 2011, p.1).

This act aims prosperity by including clearing rules and a level of playing field; matching skills and needs; integration (i.e., social cohesion and approaching to diversity in the host countries). According to the act, solidarity is also important to enable a coordination between EU countries and cooperation with non-EU countries in terms of transparency, trust and cooperation; efficient and coherent use of available means; partnership with non-EU countries, which is very important for supporting the development of non-EU countries' immigration and asylum systems, as well as legislative frameworks. Security for the EU is also another aspect of immigration via common visa policy, integrated border management (the Schengen area's integrity), stepping up the fight against illegal immigration and zero tolerance for trafficking in human beings, and last, effective and sustainable return policies which are integral to policies on immigration.

Migration is also a crucial dimension of EU-Mediterranean Partner Countries (MPC's) relations. However, the lack of a coherent European Migratory Policy makes it difficult to develop a consistent migratory policy towards MPC's with many reasons (Lorca and De Arce, July 2008, p.8). Givens and Luedtke (2003) stresses that with no internal border controls in the Schengen zone, any third-country nationals any "third-country nationals" admitted to any one of the member states can easily travel to other member states. However, actual harmonization of most aspects of EU immigration policy has not been forthcoming (p.2) due to inefficient immigration policies (like visas, political asylum, and illegal immigration etc.) and inefficient integration policies (like antidiscrimination and citizenship etc.) along with economic and institutional imperatives, political silence, partisanship, economies that may explain the present-day difficulties, and convergence/divergence in national immigration policy (p.24).

In addition, the focus of policy-makers focuses clearly on control and return measures, rather than in active integration policies. Demographic dynamics and socio-economic conditions in Euro-Mediterranean region compared with those of the EU have created push affects for immigrants. Therefore, under these conditions, focusing exclusively in borders control and return measures are clearly sub-optimal as a policy formulation (Lorca and De Arce, July 2008). Both control and integration face important difficulties, but given that no border is impassable, and that migratory pressure is important for some countries, integration seems a more fruitful approach in the long run (Lorca and De Arce, July 2008, p.10). Under different scenarios, Lorca and De Arce study concludes that immigration flows from some MPC's (mainly Morocco and Turkey) will remain high in the long run (Lorca and De Arce, July 2008, p.8).

In North African countries and Turkey, higher population rate has led a fast increase in working-age population which is opposite case in the EU. According to Lorca and De Arce (2008), this situation can be complementary enough to counterbalance or not for labor market demand/supply evolution, socio-economic progress, and barriers removed or built up at both sides of the "board game". On the other hand, the EU's concern is to fight against illegal immigration because of that (i) the existence of employments in the destination country for illegal immigrants; (ii) a contradiction between the percentage of irregular manpower and States' permissiveness, because the possibilities of rigorous measures are limited; (iii) regularizations allows for a better management of immigrants but do not impede future illegal immigration; and (iv) bilateral readmission agreements, are not efficient instruments.

There are some inconsistencies of restrictive-biased immigration policies that following highlights create: (i) the difficulties to satisfy in a legal way EU's labor demand; (ii) in spite of highly restrictive measures the entrance of immigrants keeps going; and (iii) emphasis is placed on control policies, fostering an inappropriate environment to integration. According to the study of Shafagatov and Mirzayeva, (2005), legal basis for the immigration issues was weak: it did not involve the binding regulations and directions (p.33). Thus, the presence of irregular immigrants is an unavoidable consequence of tight immigration policies and a reality of the migratory phenomenon. A more flexible position in the regulation of migratory flows, in which small corrections in the restrictiveness of immigration legislation, without arriving to full freedom, could lead to important efficiency gains (Lorca and De Arce, July 2008, p.10).

Lorca and De Arce (2008) provides some scenarios to decrease immigrants in the EU countries: (i) the slow economic convergence reduces slightly the number of immigrants, reflecting that a moderate convergence pattern in MPC's economies does not imply a significant reduction of immigrants. (ii) The fast economic convergence is the one that projects the lower figures of MPC's immigrants, but even in this case the numbers still very significant. (iii) The social policy, income inequality reduction projects lower immigration figures, but does not alter the trend of migration towards the EU. (iv) The low employment growth scenario generally shows lower immigration figures than the business as usual one, but numbers still high. (v) The high employment growth scenario projects a further reduction of MPC's-EU migration, but a smaller one that the projected under the fast convergence or social policy scenarios. As a result of these scenarios, immigration flow remains significant and migratory pressure will continue due to inefficient Europeanized control and return policies. Besides, fast economic convergence between the EU and MPC's, and the implementation of redistributive social policies in MPCs enable low immigration figures. However, these measures seems moderately reduce the number of immigrants from MPCs. In the aspect of socio-economic-demographic, immigration will be a key driver of EU-MPC's relations and of internal EU demographic dynamics. In sub-conclusion, steps towards building a common EU approach to immigration do not, however, automatically meet the expectations and interests of national policies, which, in light of recent increases in immigration towards and across the EU countries, are often more concerned with limiting immigration and to putting limitations on who may enter and why than with adopting common solutions to common challenges (Bia, 2004).

3. Methodology

Migration-Trade

Our approach, like previous econometric tests of the effect of migration on trade is based on a gravity model of trade. Analyses are carried out by running aggregated and industry-level augmented gravity trade regressions and number of establishment and employment regressions by industry. The basic idea behind the gravity model comes from the gravity theory in physics. Newton's law of universal gravitation states the gravitational attraction between two bodies is proportional to the product of their masses and inversely proportional to the square of the distance between them. In trade models, the physical bodies are the exporting and importing countries, and their "mass" is their economic mass. In other words, the idea is that the bigger the sizes of the economies, the bigger the trade, and the greater the distance, the lower the trade. Thus, the basic gravity model can be written as in (1).

$$M_{ij} = G\left(\frac{E_i E_j}{D_{ij}^2}\right) \quad (1)$$

where M_{ij} is the level of trade (exports, imports, or total trade) between countries i and j, E_i is the economic mass of country i, D_{ij} is the distance between i and j, and G is the gravitational constant. This can be viewed in logarithmic form as in (2).

$$\ln M_{ij} = \beta_0 + \beta_1 \ln(E_i E_j) + \beta_3 \ln D_{ij}. \quad (2)$$

From an econometric point of view, this is a very simple specification where the parameter β_1 is the elasticity of trade with respect to the mass of the countries. In empirical trade models, the economic mass is typically proxied by the GDP (or some function of it) of the countries. It is also most common to extend the basic equation by including a number of factors that potentially facilitate or inhibit trade, such as cultural, geographical, and political characteristics. Such extended models are referred to as the 'augmented' gravity models and specified as in (3).

$$\ln M_{ij} = \alpha_0 + \alpha_1 \ln I_{ij} + \alpha_2 \ln E_i + \alpha_3 \ln E_j + \alpha_4 \ln D_{ij} + \alpha_5 \ln Z_{ij} \quad (3)$$

In this equation, M_{ij} is the level of trade (exports or imports in constant prices) between countries i (host) and j (home), where I_{ij} is the number of immigrants of home country j living in host country *i*, E_i and E_j are the GDP in constant prices (economic mass) respectively for host and home countries *i* and *j*, D_{ij} is the distance between *i* and *j* and Z_{ij} represents other explanatory variables such as language, colonial ties, borders and access to coastlines, etc.

The gravity models that are estimated in this research involve both 'basic/fundamental' and 'augmented' type models. Industrial breakdown is followed in both types and quantification of migration impacts as and regional breakdown on migration is introduced in the augmented form.

We assemble data for a panel of all EU countries for the years 1998-2008. The key variable in our study is one measuring the number of migrants from each trading partner (country *j*) in the country of interest (country *i*). This variable is interacted with a dummy variable for MPCs and for EE countries in order to separate out the effects of immigrants from MPCs and EE countries. Static and dynamic panel estimation techniques are used to estimate the effects of regressors on both bilateral exports and imports both at aggregated and industry level.

Migration-Product Diversity

"The number of establishment" equations are actually of reduced form and these are derived from Mazzolori and Neumark (2009) which finds its theoretical roots in the Ottaviano and Peri (2006: 2008). Ottaviano and Peri adapts the concept of "consumption variety" effects to the study of the economic benefits of immigration. They develop a general equilibrium model for a small open economy where individuals are differentiated in terms of origin – home-born and foreign-born – and consume two goods – a homogenous tradable good and a differentiated local non-tradable good. Individuals of different origin are assumed to be able to produce different varieties of the non-tradable good. In this setting, the non-tradable good can be thought of as a composite basket of local services whose supply particularly benefits from "ethno-cultural" diversity, such as restaurants, retail trade and entertainment.

We build on the same approach and attempt to directly study the relationship between immigrant inflows and the composition of products available to consumers. We look at the effects of immigration on product diversity along two dimensions; industry level enterprise numbers and employment.

The models to estimate the impacts on number of enterprises and on employment are specified as in equations 4 and 5, in which variable *enter* and *emp* are number of enterprises and employment in a certain industry, *EE/Pop* is the share of immigrants from Eastern European Countries in total population, *MPC/Pop* is the share of immigrants from Mediterranean Partner Countries in total population, *NAV/Pop* is the share of native people in total population and *REN* [16]is the total renumeration paid to employees[17]. These equations are also estimated by using the changing rates of the variables.

$$enter_i = \alpha_0 + \alpha_1 (EE/Pop) + \alpha_2 (MPC/Pop) + \alpha_3(NAV/Pop) + \alpha_4(REN) + \varepsilon$$

$$emp_i = \beta_0 + \beta_1 (EE/Pop) + \beta_2 (MPC/Pop) + \beta_3(NAV/Pop) + \varepsilon$$

The main advantage of using a panel-based approach is the ability to deal with unobserved country-pair heterogeneity which conventional cross-section estimation techniques fail to model yielding biased estimates (see e.g. Cheng and Wall (2005) and Carrère (2006)). Cross-section specifications also fail to properly account for possible omitted variables bias (see e.g. De Benedictis and Taglioni (2011)). Two commonly used panel estimation techniques are the fixed effects (FE) and random effects (RE) estimation. The main difference between the two methods is that FE method allows the country-pair individual effects to be correlated with the regressors whereas the RE model assumes that individual effects are uncorrelated with all the regressors. Furthermore, because the FE method is a within-method (which transforms the data into deviations from individual means) that ignores the between-groups variance, it cannot provide estimates for the coefficients of the time-invariant regressors such as distance. Although this is a disadvantage, the FE estimator is unbiased and consistent in the presence of correlation between the individual effects and the regressors whereas the RE estimator is not. The common procedure used to choose which model to use is to employ a Hausman specification test suggested by Hausman (1978). We follow the same strategy of estimating both FE and RE models and employ a Hausman test.

[16] REN is used as a proxy to represent costs in that particular establishment (Dinlersöz, 2004).
[17] Note that sum of EE/Pop, MPC/Pop and NAV/Pop does not add up to 1 as there are other migrants originating from countries other than EE and MPC.

4. Data

The data used in econometric analyses are grouped under trade, migration, gravity variables, enterprise and employment components.

Trade

This data set is composed of annual bilateral total export and total import data between the EU (27) and the Mediterranean partner countries (MPC); and Eastern European countries (EE). EU includes 27 countries at disaggregated level; MPC includes Albania, Algeria, Bosnia and Herzegovina, Croatia, Egypt Arab Republic, Israel, Jordan, Lebanon, Morocco, Syrian Arab Republic, Tunisia and Turkey; EE includes Russia, Czech Republic, Poland, Hungary, Romania and Moldova, Croatia, Lithuania, Latvia, Estonia, Serbia, Montenegro, Bosnia, Herzegovina, Albania, Kosovo, and Macedonia. Time span covered is 1998-2010. Nominal values of trade data are converted into real values by using export and import prices indices (based on year 2000 prices) provided in the Eurostat. The source of data is COMEXT: Eurostat's External Trade database, http://ec.europa.eu/eurostat.

Migration

This data covers number of immigrants in the EU whose home country belong to MPC and EE countries according to country of birth. The immigrants data is organized by sex and age group. However, the migration variable used in econometric estimation includes total number of immigrants. The source of data is http://ec.europa.eu/eurostat.

Gravity variables

Main dataset for variables in gravity equation are collected both for the EU and MPC from the CEPII Gravity Set which is available at http://www.cepii.fr/anglaisgraph/bdd/gravity.htm. This data set covers real GDP and real per capita GDP, population and bilateral distance. GDP data was updated by using World Development Indicators database of World Bank, available at http://data.worldbank.org/. This data set also covers various intercept dummy variables that show whether bilateral trade partners have common border, language, colonial relationship, currency, religion and are part of a bilateral and/or multilateral trade agreement. Regional trade agreement information is also obtained from WTO, available at http://rtais.wto.org/UI/PublicMaintainRTAHome.aspx.

Product Diversity

The OECD's Structural and Demographic Business Statistics is used in the product diversity analyses. This database provides information at a very detailed sectoral level including: turnover, value-added, production, operating surplus, employment, labor costs and investment to name but a few. The breakdown by industrial sector, including services, is supplemented by a further breakdown into size classes. The database also includes business demography statistics, namely enterprise birth, death and survival rates as well as the number of high-growth enterprises and gazelles from 1995 onwards.

5. Results

Migration-Trade

Trade equations were specified both for bilateral exports and imports and both in real and nominal terms. Aggregate trade equations were estimated in static and dynamic forms and static industry-level equations were estimated for 6 industries which were beverages; crude materials; food and live animals; machinery and transport equipment; manufactured goods classified chiefly and mineral fuels, lubricants. Fixed and random effect models were estimated and the decision among the two was given by using Hausman specification test.

Almost in all cases real trade models provided statistically better results when compared to nominal trade models and majority of the random effect models were rejected. Therefore in this report, findings of the fixed effect, real trade models are provided. But still, in some cases findings of the random effect models are also given.

One common problem observed while estimating the impact of migration on trade is the endogeneity which may result in biased and inconsistent results. Endogeneity bias can be due to three reasons (Felbermayr, 2012). First, is the "reverse causality" which assumes that some positive shock on the value of bilateral trade between two countries leads migration to increase between the same countries. Second, is the omitted variables bias and Hanson (2010) argues the difficulty of putting causal relationship between trade and migration in the case of some omitted variables which immigration may be correlated with but which may affect trade as well (cultural similarities, preferential trade policies etc.). Third, is the measurement error.

To cope with endogeneity bias the most convincing way is to find some exogenous events that cause variation in bilateral migration stocks but have no direct effect on bilateral trade, which are quite rare (Felbermayr, 2012). Some studies propose instrumental variables but mostly panel data models are used to address the concern, particularly omitted variables bias. In some studies cost of obtaining passport to host countries is used as an instrument while in some others historical migration data and a country with similar characteristics to the host country are used as instrumental variables.

In our study, first due to lack of data and second due to large number of countries in the home and host country groups we could not used the instruments mentioned above. Instead we controlled the heterogeneity in the sample and omitted variable bias through inclusion of various dummy variables in both static and dynamic panel econometric models. In dynamic models we employed Arellano-Bond regressions that used GMM system estimators which deal with endogeneity and autocorrelation and in static models robust estimators were used. The dummy variables included in models cover the information whether the partner and reporter countries do have a colonial relationship, common language, common currency, contiguity; are partners in GATT and/or in free trade agreement and/or regional trade agreement and/or bilateral trade agreement. In addition time dummy variables are also introduced[18].

In this section tables regarding static aggregate exports/imports estimation and static industry-level exports and imports which exclude interaction dummy variables that are built by using migration by region of origin are presented. Tables, regarding dynamic aggregate exports/imports estimation and static industry-level exports and imports (with interaction dummy variables) are provided in the Appendix.

Comparison-Total Exports

Table 1 provides findings from both fixed and random effect estimation of static aggregate bilateral exports from the EU to MPC and EE countries with and without interaction dummy variables in a comparative way. First two columns stand for fixed and random effect estimation without interaction dummies respectively, while the last two stand for the ones with interaction dummy variables. Definitions of the variables are:

mig:	migration
dist:	distance between two capitals
gdpcons:	gdp in constant prices (year 2000)
_o:	reporter country
_d:	partner country
contig:	intercept dummy for contiguity
colony:	intercept dummy for colonial relationship
comlang:	intercept dummy for common language
gatt:	intercept dummy for GATT agreement
rta:	intercept dummy for regional trade agreement
comcur:	intercept dummy for common currency
migmpc:	interaction dummy if migration originating country is from MPC
migeec:	interaction dummy if migration originating country is from EE
migasea:	interaction dummy if migration originating country is from Asia & Southeast Asia

[18] Unfortunately, "multilateral resistance index" that has been referred to as average trade barrier by Anderson and Wincoop (2003) could not be included in our empirical models and left for future work.

Standard gravity specification includes distance and gross domestic product of both destination and origin countries. Distance variable is omitted in all estimations, whether the model includes interaction dummy variables or not, as it does not change by year. It could be included as separate intercept dummy variables for each bilateral relationship however this caused singular matrix problem. The coefficients on gross domestic product both in origin and destination countries were found to be statistically significant in all estimations which showed that rising demand/income in both groups had positive impact on exports from the EU. First augmentation to the standard model was done by including various intercept dummy variables including time dummies for each year[19]. In fixed effect models, all the time dummies were found to have negative impact on autonomous exports from the EU and the effect increases as time passes.

Table 1: Comparison of Fixed and Random Effect Estimation Results with and without Interaction Dummy Variables-Aggregate Exports

Variable	ferob		rerob		ferobinter		rerobinter	
lmig	0.06	*	0.12	***	-0.03		0.08	***
ldist	(omitted)		-1.20	***	(omitted)		-1.31	***
lgdpcons_o	1.60	***	1.00	***	1.71	***	1.01	***
lgdpcons_d	1.81	***	0.86	***	1.74	***	0.89	***
contig	(omitted)		0.58	***	(omitted)		0.40	**
colony	(omitted)		-0.10		(omitted)		-0.08	
comlang_et~o	(omitted)		0.15		(omitted)		0.26	
gatt_d	0.09		0.18	*	0.08		0.16	*
rta	0.04		0.08		0.02		0.11	*
comcur	-0.20		-0.19	**	-0.18		-0.12	
lmigmpc					0.06		-0.02	
lmigeec					0.12		0.04	**
lmigasea					-0.05		0.11	***
_cons	-67.46	***	-20.07	***	-68.36	***	-20.22	***

legend: * $p<0.05$; ** $p<0.01$; *** $p<0.001$

Among the other intercept dummy variables (sharing common border, having former colonial relationship, speaking common language, being in a regional trade agreement, being a member of GATT, having common currency) no consistent outcome was found across the models. Second augmentation to the standard model was done by including migration variable first as total and second by region of origin. Total migration to the EU was found to be positively

[19] In the above summary tables statistics regarding time dummy variables are deleted.

correlated with exports from the EU however no statistically significant effect was found regarding the immigrants specifically from the Mediterranean and from the Eastern European countries.

Comparison-Total Imports

In the estimations regarding bilateral imports (Table 2), coefficients of the gross domestic product both in origin and destination countries were found to be statistically significant, as was the case in exports, showing that rising demand/income in these countries has an increasing impact on imports of the EU. Opposite to the case of exports, time dummy variables were found to have no significant impact on autonomous imports however being a member in a regional trade agreement had a statistically significant positive impact. The estimated coefficient on total migration to the EU is positive and significant showing that the increase in imports of the EU might be a result of the rise in number of immigrants. Findings regarding migration by originating regions provide interesting outcomes as the effect differs with respect to the region. While immigrants of the Eastern European countries have a positive correlation with the EU's imports from these countries, immigrants of the Mediterranean countries have no significant impact on imports.

In both dynamic export and import estimations (Table A3-A6) findings partly support that of static equations. First similarity is that total migration to the EU was found to be positively correlated with exports and imports. Second, intercept time dummies were found to be statistically insignificant in dynamic imports equation as it was in static version. In case of exports the findings regarding time dummies were contradictory to findings in static version. Another mixed outcome was observed for coefficient of gross domestic product. While GDP in originating countries was statistically insignificant in exports equation, it was so in imports equation for destination countries. Being a member of regional trade agreement was found to have no significant impact both in exports and imports equations. Finally in both equations adjustment lags (2 year) were observed to have significant impact on trade.

Impacts of migration on both exports and imports are quite inelastic both in static and dynamic versions. Main impact on trade arises through the change in GDP even when compared to coefficients of adjustment lags.

Table 2: Comparison of Fixed and Random Effect Estimation Results with and without Interaction Dummy Variables-Aggregate Imports

Variable	ferobimp		rerobimp		ferobinterimp		rerobinterimp	
lmig	0.09	*	0.12	***	-0.05		0.10	***
ldist	(omitted)		-0.89	***	(omitted)		-1.03	***
lgdpcons_o	1.20	***	0.88	***	1.42	***	0.91	***
lgdpcons_d	0.54	*	1.09	***	0.50	*	1.09	***
contig	(omitted)		1.12	***	(omitted)		0.59	***
colony	(omitted)		0.44	*	(omitted)		0.59	**
comlang_et~o	(omitted)		-0.04		(omitted)		0.37	
gatt_d	-0.03		0.13		-0.05		0.07	
rta	0.29	**	0.20	*	0.24	**	0.29	***
comcur	0.06		-0.16		0.08		-0.22	*
lmigmpc					0.16		-0.17	***
lmigeec					0.19	*	0.06	***
lmigasea					-0.32	*	0.13	***
_cons	-26.66	**	-25.47	***	-30.55	***	-25.04	***

legend: * $p<0.05$; ** $p<0.01$; *** $p<0.001$

Industry-level Exports

The gravity model was also used to estimate the impact of migration to the EU on the industry-level exports of EU. This equation was specified for 6 industries for which the names were given before. Standard variables of the gravity specification are bilateral distance and gross domestic product of both origin and destination countries. As it was the case in aggregate exports distance variables were omitted from export equation. Gross domestic product of all countries was found to have statistically significant impact on the EU's exports of all industries, which supports the finding in case of aggregate exports. Among various intercept dummy variables the only one which has a common positive impact on autonomous exports of all industries (except for crude mat. and food) is common currency. While being a member in GATT increases the autonomous exports in beverages compared to non-members; being a partner in a regional trade agreement was found to have a positive effect on autonomous exports of crude material and food compared to the case when partners are not a part of regional trade agreement. Again as it is in total exports, almost in all industries (except for mineral fuels and lubricants) autonomous exports do fall as years pass. Finally, migration to the EU was found to have a positive impact on exports of beverages, food and live animals and machinery and transport equipment. Its impact on exports of crude materials, manufacturing industries and mineral fuels and lubricants was found to be statistically insignificant (Table 3).

Same equations were also estimated by creating interaction dummy variables according to the origin of the migration (Tables A7-A8). Only in two cases, crude materials and chiefly classified manufacturing, migration from Eastern European countries were found to have a positive impact on exports of the EU. Migration from the Mediterranean countries had a positive impact only on exports in crude materials.

Table 3: Industry Level Exports

	Beverages				Crude materials				Food and live animals			
	Fixed-effects (within) regression		obs. =	5178	Fixed-effects (within) regression		obs. =	5624	Fixed-effects (within) regression		obs. =	5606
	Group variable: newpairid		grps. =	979	Group variable: newpairid		grps. =	1016	Group variable: newpairid		grps. =	1032
	R-sq: within = 0.0935	obs. / grps.	min =	1	R-sq: within = 0.1373	obs. / grps.	min =	1	R-sq: within = 0.1375	obs. / grps.	min =	1
	between = 0.4151		avg =	5.3	between = 0.4455		avg =	5.5	between = 0.3510		avg =	5.4
	overall = 0.3690		max =	13	overall = 0.4400		max =	13	overall = 0.3403		max =	13
			F(18,978) =	10.31			F(18,1015) =	19.27			F(18,1031) =	14.95
	corr(u_i, Xb) = -0.5131		Prob > F =	0	corr(u_i, Xb) = -0.5705		Prob > F =	0	corr(u_i, Xb) = -0.6476		Prob > F =	0
		Robust				Robust				Robust		
	Coef.	Std. Err.	t	P>|t|	Coef.	Std. Err.	t	P>|t|	Coef.	Std. Err.	t	P>|t|
lmig	0.29	0.08	3.71	0.00	0.07	0.05	1.31	0.19	0.20	0.05	3.84	0.00
ldist	(omitted)				(omitted)				(omitted)			
lgdpcons_o	1.96	0.94	2.07	0.04	1.23	0.46	2.69	0.01	2.49	0.47	5.26	0.00
lgdpcons_d	0.94	0.45	2.09	0.04	1.86	0.38	4.88	0.00	0.42	0.30	1.40	0.16
contig	(omitted)				(omitted)				(omitted)			
colony	(omitted)				(omitted)				(omitted)			
comlang_et~o	(omitted)				(omitted)				(omitted)			
gatt_d	0.49	0.25	1.95	0.05	0.02	0.17	0.11	0.91	-0.09	0.17	-0.54	0.59
rta	0.08	0.15	0.51	0.61	0.35	0.15	2.25	0.03	-0.23	0.10	-2.21	0.03
comcur	-0.55	0.16	-3.46	0.00	-0.09	0.07	-1.28	0.20	-0.02	0.14	-0.13	0.89
_cons	-62.70	25.91	-2.42	0.02	-63.15	15.75	-4.01	0.00	-5.94	1.38	-4.30	0.00
sigma_u	3.07				2.74				3.33			
sigma_e	1.18				0.88				0.84			
rho	0.87				0.91				0.94			

	Machinary and transport equipment				Manufactured goods classified chiefly				Mineral fuels, lubricants			
	Fixed-effects (within) regression		obs. =	5921	Fixed-effects (within) regression		obs. =	5898	Fixed-effects (within) regression		obs. =	5158
	Group variable: newpairid		grps. =	1059	Group variable: newpairid		grps. =	1057	Group variable: newpairid		grps. =	932
	R-sq: within = 0.2397	obs. / grps.	min =	1	R-sq: within = 0.1475	obs. / grps.	min =	1	R-sq: within = 0.1016	obs. / grps.	min =	1
	between = 0.6135		avg =	5.6	between = 0.4392		avg =	5.6	between = 0.2001		avg =	5.5
	overall = 0.6134		max =	13	overall = 0.4918		max =	13	overall = 0.2054		max =	13
			F(18,1058) =	31.61			F(18,1056) =	22.07			F(18,931) =	11.32
	corr(u_i, Xb) = -0.8552		Prob > F =	0	corr(u_i, Xb) = -0.3649		Prob > F =	0	corr(u_i, Xb) = -0.5364		Prob > F =	0
		Robust				Robust				Robust		
	Coef.	Std. Err.	t	P>|t|	Coef.	Std. Err.	t	P>|t|	Coef.	Std. Err.	t	P>|t|
lmig	0.11	0.04	2.75	0.01	0.03	0.04	0.82	0.41	-0.04	0.08	-0.48	0.63
ldist	(omitted)				(omitted)				(omitted)			
lgdpcons_o	2.24	0.35	6.40	0.00	0.88	0.28	3.11	0.00	2.25	0.78	2.89	0.00
lgdpcons_d	2.34	0.22	10.52	0.00	1.45	0.21	6.96	0.00	1.70	0.54	3.16	0.00
contig	(omitted)				(omitted)				(omitted)			
colony	(omitted)				(omitted)				(omitted)			
comlang_et~o	(omitted)				(omitted)				(omitted)			
gatt_d	0.12	0.12	1.01	0.31	-0.08	0.09	-0.91	0.36	-0.10	0.22	-0.47	0.64
rta	0.12	0.09	1.32	0.19	0.05	0.07	0.82	0.41	-0.17	0.17	-1.06	0.29
comcur	-0.47	0.21	-2.23	0.03	-0.16	0.07	-2.36	0.02	-0.70	0.24	-2.93	0.00
_cons	-9.84	1.04	-9.45	0.00	-419.69	8.16	-5.14	0.00	-0.87	2.25	-3.86	0.00
sigma_u	3.35				2.36				4.19			
sigma_e	0.6				0.53				1.46			
rho	0.97				0.95				0.89			

Industry-level Imports

The empirical findings from the estimated industry-level imports equations are quite mixed compared to exports. Gross domestic product in destination countries was found statistically significant only in machinery and transport equipment industry equation. Therefore income level in the EU was found to have no impact on imports of machinery and transport equipment. However, gross domestic product in migration originating countries was found to have positive impact on imports of the EU in all industries except in food and manufacturing. As years pass the autonomous imports in beverages decrease while it increases in food industries. In rest of the industries no significant impact of years on autonomous imports was observed. Regional trade agreement seemed to ease imports of the EU in crude materials and manufacturing only. In addition, common currency seemed to ease imports in machinery and transport equipment and manufacturing. Finally, migration had only significant positive impact on imports of food and live animals and machinery and transport equipment (Table 4).

In Tables (A8) findings regarding industry-level import equations that included interaction dummy variables according to the origin of the migration are presented. While migration from Eastern European countries was found to have a positive impact on imports of beverages, machinery and transport equipment and manufacturing industries, it had a negative impact on imports of food and live animals. Migration from the Mediterranean countries had a positive impact on imports in food and live animals while it had a negative impact on beverages.

Table 4: Industry Level Imports

	Beverages				
	Fixed-effects (within) regression			obs. =	4929
	Group variable: newpairid			grps. =	948
	R-sq: within = 0.0603			min =	1
	between = 0.0831			avg =	5.2
	overall = 0.0769			max =	13
				F(18,947) =	5.09
	corr(u_i, Xb) = -0.7121			Prob > F =	0
	Coef.	Robust Std. Err.	t	P>|t|	
lmig	0.03	0.10	0.32	0.75	
ldist	(omitted)				
lgdpcons_o	3.12	0.71	4.39	0.00	
lgdpcons_d	0.48	0.60	0.80	0.43	
contig	(omitted)				
colony	(omitted)				
comlang_et~o	(omitted)				
gatt_d	0.44	0.35	1.25	0.21	
rta	-0.03	0.25	-0.11	0.91	
comcur	-0.20	0.14	-1.44	0.15	
_cons	-79.17	22.91	-3.46	0.00	
sigma_u	5.05				
sigma_e	1.32				
rho	0.94				

	Crude Materials				
	Fixed-effects (within) regression			obs. =	5534
	Group variable: newpairid			grps. =	1033
	R-sq: within = 0.0794			min =	1
	between = 0.1996			avg =	5.4
	overall = 0.1791			max =	13
				F(18,1032) =	11.14
	corr(u_i, Xb) = -0.2543			Prob > F =	0
	Coef.	Robust Std. Err.	t	P>|t|	
lmig	-0.02	0.07	-0.35	0.73	
ldist	(omitted)				
lgdpcons_o	1.49	0.49	3.02	0.00	
lgdpcons_d	0.11	0.37	0.31	0.76	
contig	(omitted)				
colony	(omitted)				
comlang_et~o	(omitted)				
gatt_d	0.01	0.23	0.04	0.97	
rta	0.27	0.14	1.89	0.06	
comcur	-0.12	0.20	-0.60	0.55	
_cons	-2.56	1.60	-1.61	0.11	
sigma_u	3.01				
sigma_e	0.91				
rho	0.92				

	Food and Live Animals				
	Fixed-effects (within) regression			obs. =	5622
	Group variable: newpairid			grps. =	1032
	R-sq: within = 0.1212			min =	1
	between = 0.3202			avg =	5.4
	overall = 0.3101			max =	13
				F(18,1031) =	13.97
	corr(u_i, Xb) = 0.2297			Prob > F =	0
	Coef.	Robust Std. Err.	t	P>|t|	
lmig	0.36	0.07	4.93	0.00	
ldist	(omitted)				
lgdpcons_o	0.21	0.39	0.54	0.59	
lgdpcons_d	0.02	0.32	0.05	0.96	
contig	(omitted)				
colony	(omitted)				
comlang_et~o	(omitted)				
gatt_d	-0.28	0.17	-1.64	0.10	
rta	0.12	0.15	0.80	0.43	
comcur	-0.10	0.10	-1.02	0.31	
_cons	7.12	1.24	0.57	0.57	
sigma_u	2.75				
sigma_e	0.83				
rho	0.92				

	Machinary and Transport Equipment				
	Fixed-effects (within) regression			obs. =	5790
	Group variable: newpairid			grps. =	1061
	R-sq: within = 0.1092			min =	1
	between = 0.4698			avg =	5.5
	overall = 0.4496			max =	13
				F(18,1060) =	15.71
	corr(u_i, Xb) = -0.2328			Prob > F =	0
	Coef.	Robust Std. Err.	t	P>|t|	
lmig	0.13	0.06	2.38	0.02	
ldist	(omitted)				
lgdpcons_o	1.54	0.42	3.66	0.00	
lgdpcons_d	1.23	0.34	3.66	0.00	
contig	(omitted)				
colony	(omitted)				
comlang_et~o	(omitted)				
gatt_d	-0.01	0.20	-0.03	0.98	
rta	0.12	0.14	0.82	0.41	
comcur	0.62	0.23	2.68	0.01	
_cons	-5.48	1.41	-3.88	0.00	
sigma_u	2.89				
sigma_e	0.87				
rho	0.92				

	Manufactured Goods Chiefly Classified				
	Fixed-effects (within) regression			obs. =	5799
	Group variable: newpairid			grps. =	1054
	R-sq: within = 0.0794			min =	1
	between = 0.3977			avg =	5.5
	overall = 0.3998			max =	13
				F(18,1053) =	16.11
	corr(u_i, Xb) = 0.4674			Prob > F =	0
	Coef.	Robust Std. Err.	t	P>|t|	
lmig	-0.03	0.04	-0.70	0.48	
ldist	(omitted)				
lgdpcons_o	0.44	0.37	1.19	0.24	
lgdpcons_d	0.33	0.27	1.19	0.23	
contig	(omitted)				
colony	(omitted)				
comlang_et~o	(omitted)				
gatt_d	-0.12	0.14	-0.88	0.38	
rta	0.35	0.16	2.15	0.03	
comcur	0.25	0.09	2.78	0.01	
_cons	-3.07	1.20	-0.26	0.80	
sigma_u	3.07				
sigma_e	0.77				
rho	0.94				

	Mineral Fuels and Lubricants				
	Fixed-effects (within) regression			obs. =	4032
	Group variable: newpairid			grps. =	832
	R-sq: within = 0.0388			min =	1
	between = 0.0294			avg =	4.8
	overall = 0.0210			max =	13
				F(18,831) =	8.07
	corr(u_i, Xb) = -0.4613			Prob > F =	0
	Coef.	Robust Std. Err.	t	P>|t|	
lmig	0.06	0.11	0.52	0.60	
ldist	(omitted)				
lgdpcons_o	1.87	0.89	2.10	0.04	
lgdpcons_d	-0.42	0.74	-0.57	0.57	
contig	(omitted)				
colony	(omitted)				
comlang_et~o	(omitted)				
gatt_d	-0.07	0.44	-0.16	0.87	
rta	0.02	0.32	0.05	0.96	
comcur	0.09	0.71	0.12	0.90	
_cons	-2.29	2.95	-0.77	0.44	
sigma_u	4.95				
sigma_e	1.83				
rho	0.88				

Migration-Product Diversity

Migration-product diversity relationship was estimated on two bases: employment and number of enterprise. Equations were specified for 7 industries: mining and quarrying; food products, beverages and tobacco; light manufacturing; heavy manufacturing; electricity, gas and water supply; construction; wholesale and retail trade, hotels and restaurants. Dependent variables (employment and number of enterprises) were specified at levels and then as changing rate and independent variables were adjusted accordingly. Fixed and random effect models were estimated and the decision among the two was given by using Hausman specification test. Therefore, for each industry 8 models were estimated and in total 56 econometric estimations carried out.

Almost in all cases random effect models were rejected. Therefore in this report, findings of the fixed effect models are provided. But still, in some cases findings of the random effect models are also given. In this section comparison tables, regarding employment, change in employment and number of enterprises is presented. Because of the poor statistical significance obtained in the "change in number of enterprise" equations, empirical findings regarding these were not given in the following tables. In Appendix, separate estimation results for each industry and for each dependent variable are provided.

Before going over the empirical results two possible problems -one regarding theoretical background and the other econometric specification- should be noted. On the theoretical front; the limited number of empirical works on the issue, stated before, focuses on the retail industries and therefore the theoretical background of the specified empirical relationship is provided actually for retail industries. The retail/wholesale differentiation is a necessary selection as the models search for the impact of consumption patterns (implicitly given by migration that differs by origin) on endogenous variables. Here in this study, our industry groupings mostly stay at wholesale level due to lack of data at the required disaggregation level. Because of this, our findings are not directly comparable with findings of the relevant literature and hence care should be given while interpreting the results. On the empirical front; the specification of the dependent and independent variables in the equation call for a possible endogeneity problem among the variables. This might be the case especially if for example there are certain preferences of migrants of various origins in choosing the host region/districts to settle which might cause certain new establishments/enterprises to develop in those regions. However, we do not expect this type of endogeneity in our models as migrants are not differentiated with respect to host regions and districts. Another reason for the endogeneity problem might be the disaggregation level of industries which for example allows for inclusion of ethnic goods etc. explicitly. Again, due to lack of data the industrial classification used in our study is much more aggregate. Lastly, size and structure of establishments (chain and/or stand-alone stores; specialized and/or diversified stores) might call for the endogeneity problem based on qualifications of the migrants. However the level of disaggregation used in our models allows neither for size and structural differentiation of establishments nor for characteristics of the migrants to be endogenized in the models. Therefore, for the stated reasons we are not expecting a serious endogeneity problem but results should be interpreted cautiously.

Table 5 summarizes findings from estimation of industry-level “enterprise numbers”. Definitions of the notation used in the table are given below the table. Although both fixed and random effect estimation results were provided, we preferred to stick to fixed effects, as random models were rejected by Hausman specification tests. The difference between the upper left and lower left part of Table 5 was that X3 in the upper model was substituted by X5 and the model re-estimated. Therefore, two mentioned parts of the Table 5 provides fixed effect estimation results for two different models for 7 industries.

One solid common finding in Table 5 is that there is positive correlation between migrants from Mediterranean countries and number of enterprises in light manufacturing industry. In the second model, a negative correlation was found between migrants from Eastern European countries and number of enterprises in electricity, gas and water supply industry. In the second model, where total population (including migrants) substitutes share of native people, the former has a negative and positive impact on number of enterprises in food products and beverages, and electricity, gas and water supply industries respectively.

Table 5: Estimation Results for Number of Enterprise Equations

		Fixed effect						Random effect					
		Variables						Variables					
		Dep. Var.	Regressors					Dep. Var.	Regressors				
	Industries		X1	X2	X3	X4			X1	X2	X3	X4	
1	Mining and Quarrying	Y1						Y1				-	
2	Food Products, Beverages and Tobacco	Y1						Y1					
3	Light Manufacturing	Y1		+				Y1		+			
4	Heavy Manufacturing	Y1						Y1				+	
5	Electricity, Gas and Water Supply	Y1				+		Y1				+	
6	Construction	Y1				+		Y1				+	
7	W/sale, Retail Trade, Hotels and Restaurants	Y1				+		Y1				+	
		Fixed effect						Random effect					
		Variables						Variables					
		Dep. Var.	Regressors					Dep. Var.	Regressors				
	Industries		X1	X2		X4	X5		X1	X2		X4	X5
1	Mining and Quarrying	Y1				-		Y1				-	+
2	Food Products, Beverages and Tobacco	Y1					-	Y1					
3	Light Manufacturing	Y1		+				Y1		+			+
4	Heavy Manufacturing	Y1						Y1		+			+
5	Electricity, Gas and Water Supply	Y1	-				+	Y1					
6	Construction	Y1				+		Y1					
7	W/sale, Retail Trade, Hotels and Restaurants	Y1				+		Y1					

+: positive significant
-: negative significant

Variables
Y1: # of enterprise
X1: immigrants from EEC / total population
X2: immigrants from MPC / total population
X3: native people / total population
X4: total renumeration paid to employees
X5: total population to substitute X3

In Table 6 findings from industry-level "employment" equations are provided as in the same structure with Table 5. There is positive correlation between migrants from Mediterranean countries and employment both in light and heavy manufacturing industries and migrants from Eastern European countries and employment in food products, beverages and tobacco industries. While increase in total population (including migrants) have a positive impact on employment in wholesale, retail trade, hotels and restaurants; it has a negative impact on light and heavy manufacturing industries, and food products, beverages and tobacco industries.

Table 6: Estimation Results for Employment Equations

		Fixed effect					Random effect				
		Variables					Variables				
		Dep. Var.	Regressors				Dep. Var.	Regressors			
	Industries		X10	X11	X12			X10	X11	X12	
1	Mining and Quarrying	Y3					Y3				
2	Food Products, Beverages and Tobacco	Y3					Y3				
3	Light Manufacturing	Y3					Y3				
4	Heavy Manufacturing	Y3		+			Y3		+		
5	Electricity, Gas and Water Supply	Y3					Y3				
6	Construction	Y3			-		Y3				
7	W/sale, Retail Trade, Hotels and Restaurants	Y3			-		Y3			-	

		Fixed effect					Random effect				
		Variables					Variables				
		Dep. Var.	Regressors				Dep. Var.	Regressors			
	Industries		X10	X11		X13		X10	X11		X13
1	Mining and Quarrying	Y3					Y3				
2	Food Products, Beverages and Tobacco	Y3	+			-	Y3				
3	Light Manufacturing	Y3		+		-	Y3				
4	Heavy Manufacturing	Y3		+		-	Y3				
5	Electricity, Gas and Water Supply	Y3					Y3				
6	Construction	Y3			+		Y3				
7	W/sale, Retail Trade, Hotels and Restaurants	Y3				+	Y3	+	+		+

+: positive significant
-: negative significant

Variables
Y3: employment
X10: immigrants from EEC / total population
X11: immigrants from MPC / total population
X12: native people / total population
X13: total population to substitute X12

Table 7 presents findings from estimation of industry-level "employment change" equations. One consistent finding with the previous model is the negative correlation between change in total population and employment change in food, beverages, tobacco and light manufacturing industries. In the version where share of native population is used instead of total population, same impact on the same industries is also observed. Again in the first version, positive correlation is found between share of immigrants from Mediterranean countries and employment change in construction industry.

Table 7: Estimation Results for Change in Employment Equations

		Fixed effect					Random effect				
		Variables					Variables				
		Dep. Var.	Regressors				Dep. Var.	Regressors			
	Industries		X6	X7	X8			X6	X7	X8	
1	Mining and Quarrying	Y2					Y2				
2	Food Products, Beverages and Tobacco	Y2			-		Y2				
3	Light Manufacturing	Y2			-		Y2				
4	Heavy Manufacturing	Y2					Y2				
5	Electricity, Gas and Water Supply	Y2					Y2			+	
6	Construction	Y2		+			Y2		+		
7	W/sale, Retail Trade, Hotels and Restaurants	Y2					Y2				

		Fixed effect					Random effect				
		Variables					Variables				
		Dep. Var.	Regressors				Dep. Var.	Regressors			
	Industries		X6	X7		X9		X6	X7		X9
1	Mining and Quarrying	Y2					Y2				
2	Food Products, Beverages and Tobacco	Y2				-	Y2				
3	Light Manufacturing	Y2				-	Y2				
4	Heavy Manufacturing	Y2					Y2				
5	Electricity, Gas and Water Supply	Y2					Y2			+	
6	Construction	Y2					Y2				
7	W/sale, Retail Trade, Hotels and Restaurants	Y2					Y2				

+: positive significant
-: negative significant

Variables
Y2: [employment (t - (t-1))/ employment (t - 1)]
X6: [immigrants from MPC (t - (t-1)) / total population (t - 1)]
X7: [immigrants from MPC (t - (t-1))/ total population (t - 1)]
X8: [native people (t- (t-1))/ total population (t - 1)]
X9: [total population (t - (t-1)) / total population (t - 1)] to substitute X8

6. Policy implications and conclusions

The empirical evidence provides the information that both productive and absorptive capacities in the host and origin countries have significant impact on total exports and imports from and to the EU. This consistent finding across aggregate export and import equations regarding the effect of main variable in the gravity model might be an evidence of a promising econometric model. Another consistent finding with the literature is that, even if not big in size, migration into the EU is positively correlated with total exports and imports from and to the EU. This finding is supported by the outcomes both in static and dynamic settings.

To this end, it may be concluded that dealing with immigrants only as labor force and considering trade in goods and movement of labor as substitutes to each other can be rejected at least at aggregate level. This might be due to market imperfectness and/or existence of transaction costs in the bilateral relationships between the EU and trade partners which causes factor price in host and origin countries to diverge.

The positive correlation between immigration and trade is an outcome which supports the expectations embodied in "information bridge hypothesis", arguing the disappearance of certain transaction costs due to migration. Besides, the same positive relationship can also be considered as an evidence for the existence of "transplanted home bias" which boosts imports from the origin countries.

Obviously these concluding remarks are related to overall trade and more disaggregated analyses are required to derive more specific conclusions at least to diagnose where there are transactions costs and market imperfectness, for which industries there exists transplanted home bias.

The positive impact of migration on exports disappears if separate effects of immigrants are analyzed with respect to origin of them as Mediterranean and Eastern European countries. However, immigrants specifically from the Eastern Europe have a positive impact on imports to the EU. Therefore, it is more total number of people/immigrants that increases exports rather than a specific group of people from a certain region; and it is more immigrants from the Eastern Europe who creates a transplanted home bias and causes a fall in transactions costs in trade with the EU rather than the Mediterranean countries. However, we still have to be careful in these interpretations because there is some evidence in the empirical literature showing that the migration/trade elasticity measured for lower levels of migration is higher compared to higher levels of migration. So, satiation could have been reached especially for immigrants from certain countries.

The rise in exports from the EU may be an issue of productive capacity and scale economies but the rise in imports to the EU is more the absorptive capacity of a certain group of immigrants compared to the others. This fact also calls for the necessity of more disaggregated analyses in order to derive more specific conclusions.

Effect of productive and absorptive capacities on exports of the EU is significant in all industries examined in the analyses. While total migration to the EU is positively correlated with exports of beverages, food and live animals and machinery and transport equipment; its impact on exports of crude materials, manufacturing industries and mineral fuels and lubricants was found to be statistically insignificant. We may conclude that labor force created by the migrants satisfy the labor demand and boost production and exports in beverages, food and live animals and machinery and transport equipment industries, and/or migrants lower the transaction costs involved in exports of these industries to trade partners, or both at the same time. Immigrants of Eastern European countries observed to boost exports in crude materials and chiefly classified manufacturing only, which are not boosted by total migration. Therefore, it is only immigrants/labor force of Eastern European countries that might yield an increase in exports of those two industries not the other immigrants. However, there is a challenging empirical outcome, which is not easy to interpret, showing the positive correlation between immigration specifically from the Mediterranean countries and exports in crude materials. Crude material exports rise due to both immigrants from Eastern European and Mediterranean countries but not to total immigration, which is quite difficult to explain.

Results related to industry-level imports are mixed. Absorptive capacity in the EU seems to have significant impact only on EU's imports in machinery and transport equipment industry. Productive capacity in migration originating countries has a positive impact on the EU's imports of all industries except for food and manufacturing industries. There is positive correlation between migration to the EU and imports of food and live animals and machinery and transport equipment. The rise in imports of food and live animals might be particularly due to rising demand of the immigrants from their home countries. The rise in imports of the machinery and transport equipment might be due to unqualified immigrant labor force (in most cases) that is unable to find employment opportunity in these industries in the EU. The statistically insignificant impact/finding regarding Eastern European immigrants on imports of food and live animals and the opposite impact regarding immigrants from Mediterranean countries also support the above argument. In a similar way, immigrants from Eastern European/Mediterranean countries have positive/negative effect on imports of beverages. Finally, migration from Eastern European countries is positively correlated with imports of machinery and transport equipment and manufacturing industries.

Apparently, all the above findings may justify for the existence of market imperfections, transactions costs, technology differences across countries etc. so that factor prices in trade partners do not equalize and migration take place. In other words, these findings may be the evidence of complementary relationship between migration and trade, rather than substitutes.

Empirical findings regarding number of enterprise and employment equations provide the information that there is positive correlation between migration from Mediterranean countries and number of enterprises in light manufacturing and employment both in light and heavy manufacturing industries. Migration from Eastern European countries is negatively correlated with enterprise numbers in electricity, gas and water supply industry and positively correlated with employment in food products, beverages and tobacco industries. These outcomes are somehow consistent with the outcomes of the trade analyses although the industry classification does not one-to-one match across trade and product diversity analyses. While migration might be a cause in rise of enterprise/employment in light-heavy manufacturing, food and beverages; it might be a cause in rise of both exports and imports in machinery and transport equipment, and a cause in rise of exports of food and live animals. The total impact on food, beverages and live animals seem to be as a result of employment opportunity for low qualified immigrant labor in this industry. However at this disaggregation level it is not possible to observe whether immigrants cause a rise in food imports from their home countries. This is also supported by the finding that change in share of native population has a negative impact on employment change in food, beverages, tobacco and light manufacturing industries. On the other hand, not much increase in immigrant labor is expected in machinery and transport equipment industries, since both exports and imports are effected by immigration but more labor is observed to be employed in light-heavy manufacturing. One last point is that the rise in share of immigrants from Mediterranean countries has a positive impact on employment change in construction industry which is quite expected due to low skill level of immigrants.

From theoretical point of view more liberalized international trade is expected to improve the welfare of both parties involved in that trade, therefore any factor that creates a rise in exports and/or imports can be considered as an opportunity in terms of increasing the welfare. The empirical evidence provided in this study finds migration as a trade boosting factor at least at aggregate levels. However, when migration is at the forefront the issues have to be approached from various angles.

The different development levels (heterogeneity of countries) of the two parties involved in international trade may play a crucial role in distribution of the welfare created by created international trade. The industrial specialization in the countries, the value added involved in those industries, level of skills required to produce in those industries are all significant factors that affect the distribution of welfare created by extra trade. Rising international trade may not be always a direct outcome of migration. The skill levels of the immigrants should match with what is required by the host country. This is actually about the question whether the extra labor force supplied by the immigrants satisfies the labor force demanded by the host countries.

Considering immigrants as only labor force is quite a shortsighted approach as they also play a significant role as consumers who may affect the consumption patterns in the host country. In addition, remittance effects in the home country should also be a part of the package that should be addressed by policies. Therefore, migration should not be perceived as a tool to create short-term positive welfare impacts through rising trade but it should also be considered as a long-term tool to build social capital.

In any case, to address all these issues in a policy package a more disaggregated empirical approach is required than what is employed in this research. Of course this depends on data availability. At least the research should be able to classify industries as mobile and non-mobile to test for the theoretical consistency of the empirical findings. The industrial classification used both in trade and product diversity components stays still quite broad and is little bit far from providing industry level policy conclusions. Besides the disaggregated industrial classification, information regarding the size, structure and type of establishments in these industries are quite important in carrying out product diversity analyses and in deriving better and more to the point policy conclusions. Though, we are not sure whether those will be available soon in the context of Mediterranean countries.

On the other hand, international trade data which is relatively easy to find at disaggregated level, is also important especially in revealing the complementary/substitutability relationship among migration and trade. At the aggregate level the literature argues migration and trade to be complements but there should be some space for substitutability for certain industries and without any hesitation we can say that policy packages can be shaped to be more specific depending on this industry-wise substitutability/complementarity relationship.

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Appendix

Migration-Trade

Static specification-Total exports

Table A1. Exports-without and with interaction dummy variables

Real exports Fixed

Fixed-effects (within) regression			obs. =	6168
Group variable: newpairid			grps. =	1112
R-sq: within = 0.3291		obs./grps.	min =	1
between = 0.5842			avg =	5.5
overall = 0.6003			max =	13
			F(18,1111) =	42.60
corr(u_i, Xb) = -0.7377			Prob > F =	0
		Robust		
	Coef.	Std. Err.	t	P>|t|
lmig	0.06	0.03	1.99	0.05
ldist	(omitted)			
lgdpcons_o	1.60	0.24	6.72	0.00
lgdpcons_d	1.81	0.16	11.19	0.00
contig	(omitted)			
colony	(omitted)			
comlang_et~o	(omitted)			
gatt_d	0.09	0.08	1.15	0.25
rta	0.04	0.05	0.69	0.49
comcur	-0.20	0.13	-1.59	0.11
_cons	-67.46	7.61	-8.86	0.00
sigma_u	2.47			
sigma_e	0.41			
rho	0.97			

Real exports Fixed with migration interaction dummy variables

Fixed-effects (within) regression			obs. =	6168
Group variable: newpairid			grps. =	1112
R-sq: within = 0.3320		obs./grps.	min =	1
between = 0.6064			avg =	5.5
overall = 0.6233			max =	13
			F(21,1111) =	41.00
corr(u_i, Xb) = -0.6842			Prob > F =	0
		Robust		
	Coef.	Std. Err.	t	P>|t|
lmig	-0.03	0.06	-0.55	0.59
ldist	(omitted)			
lgdpcons_o	1.71	0.24	7.19	0.00
lgdpcons_d	1.74	0.16	10.75	0.00
contig	(omitted)			
colony	(omitted)			
comlang_et~o	(omitted)			
gatt_d	0.08	0.08	0.93	0.35
rta	0.02	0.05	0.43	0.67
comcur	-0.18	0.13	-1.36	0.18
lmigmpc	0.06	0.10	0.62	0.54
lmigeec	0.12	0.06	1.91	0.06
lmigasea	-0.05	0.13	-0.40	0.69
_cons	-68.36	7.40	-9.24	0.00
sigma_u	2.26			
sigma_e	0.40			
rho	0.97			

Static specification-Total imports

Table A2. Imports-without and with interaction dummy variables

Real imports Fixed

.			obs. =	6153
Group variable: newpairid			grps. =	1111
R-sq: within = 0.1738		obs./grps.	min =	1
between = 0.4959			avg =	5.5
overall = 0.4946			max =	13
			F(18,1110) =	28.11
corr(u_i, Xb) = 0.0275			Prob > F =	0
		Robust		
	Coef.	Std. Err.	t	P>|t|
lmig	0.09	0.04	2.41	0.02
ldist	(omitted)			
lgdpcons_o	1.20	0.27	4.43	0.00
lgdpcons_d	0.54	0.23	2.39	0.02
contig	(omitted)			
colony	(omitted)			
comlang_et~o	(omitted)			
gatt_d	-0.03	0.10	-0.28	0.78
rta	0.29	0.09	3.29	0.00
comcur	0.06	0.07	0.84	0.40
_cons	-26.66	9.42	-2.83	0.01
sigma_u	2.16			
sigma_e	0.56			
rho	0.94			

Real imports Fixed with migration interaction dummy variables

Fixed-effects (within) regression			obs. =	6153
Group variable: newpairid			grps. =	1111
R-sq: within = 0.1841		obs./grps.	min =	1
between = 0.2960			avg =	5.5
overall = 0.2652			max =	13
			F(21,1110) =	26.39
corr(u_i, Xb) = -0.2639			Prob > F =	0
		Robust		
	Coef.	Std. Err.	t	P>|t|
lmig	-0.05	0.06	-0.79	0.43
ldist	(omitted)			
lgdpcons_o	1.42	0.28	5.11	0.00
lgdpcons_d	0.50	0.22	2.26	0.02
contig	(omitted)			
colony	(omitted)			
comlang_et~o	(omitted)			
gatt_d	-0.05	0.10	-0.52	0.60
rta	0.24	0.09	2.80	0.01
comcur	0.08	0.07	1.20	0.23
lmigmpc	0.16	0.14	1.15	0.25
lmigeec	0.19	0.07	2.58	0.01
lmigasea	-0.32	0.13	-2.40	0.02
_cons	-30.55	9.12	-3.35	0.00
sigma_u	2.65			
sigma_e	0.55			
rho	0.96			

Dynamic specification-Exports

Table A3. Exports-Dynamic specification

```
. xtdpdsys lrealexp dlgdpcons_d L.lmig rta, lags(2) twostep endog(dlgdpcons_o) vce(robust) artests(2)

System dynamic panel-data estimation         Number of obs         =      5411
Group variable: newpairid                    Number of groups      =      1104
Time variable: year
                                             Obs per group:    min =         1
                                                               avg =  4.901268
                                                               max =        11

Number of instruments =    145               Wald chi2(6)          =   6294.58
                                             Prob > chi2           =    0.0000
Two-step results
------------------------------------------------------------------------------
             |              WC-Robust
    lrealexp |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    lrealexp |
         L1. |   .6589098   .0491225    13.41   0.000     .5626316    .7551881
         L2. |   .2116195    .041514     5.10   0.000     .1302536    .2929855
             |
 dlgdpcons_o |   .6719933   .2911504     2.31   0.021     .1013491    1.242638
 dlgdpcons_d |   2.027598   .2847022     7.12   0.000     1.469592    2.585604
             |
        lmig |
         L1. |   .0914789    .037026     2.47   0.013     .0189092    .1640485
             |
         rta |   .1369663   .0690482     1.98   0.047     .0016343    .2722982
       _cons |   1.739196   .5753307     3.02   0.003     .6115689    2.866824
------------------------------------------------------------------------------
Instruments for differenced equation
        GMM-type: L(2/.).lrealexp L(2/.).dlgdpcons_o
        Standard: D.dlgdpcons_d LD.lmig D.rta
Instruments for level equation
        GMM-type: LD.lrealexp LD.dlgdpcons_o
        Standard: _cons
```

Table A4. Exports-Dynamic specification, with time dummies

```
. xtdpdsys lrealexp dlgdpcons_d L.lmig rta timedummy*, lags(2) twostep endog(dlgdpcons_o) vce(robust) artests(2)
note: timedummy1 dropped from div() because of collinearity
note: timedummy13 dropped from div() because of collinearity
note: timedummy1 dropped because of collinearity
note: timedummy2 dropped because of collinearity
note: timedummy3 dropped because of collinearity

System dynamic panel-data estimation         Number of obs         =      5411
Group variable: newpairid                    Number of groups      =      1104
Time variable: year
                                             Obs per group:    min =         1
                                                               avg =  4.901268
                                                               max =        11

Number of instruments =    155               Wald chi2(16)         =   6953.07
                                             Prob > chi2           =    0.0000
Two-step results
------------------------------------------------------------------------------
             |              WC-Robust
    lrealexp |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
    lrealexp |
         L1. |   .6463952   .0531678    12.16   0.000     .5421883    .7506022
         L2. |   .2252979   .0439063     5.13   0.000     .1392432    .3113527
             |
 dlgdpcons_o |   .1989745   .3098021     0.64   0.521    -.4082264    .8061753
 dlgdpcons_d |   1.852104   .3182783     5.82   0.000      1.22829    2.475918
             |
        lmig |
         L1. |   .0859862   .0363102     2.37   0.018     .0148195    .1571529
             |
         rta |   .0443048    .068629     0.65   0.519    -.0902054    .1788151
  timedummy4 |  -.0716357   .0208424    -3.44   0.001    -.1124861   -.0307852
  timedummy5 |  -.0892862    .022222    -4.02   0.000    -.1328405   -.0457319
  timedummy6 |  -.0992821   .0239085    -4.15   0.000    -.1461419   -.0524223
  timedummy7 |  -.0327234   .0230531    -1.42   0.156    -.0779066    .0124599
  timedummy8 |  -.0092662   .0247026    -0.38   0.708    -.0576824      .03915
  timedummy9 |  -.0247229   .0250899    -0.99   0.324    -.0738982    .0244524
 timedummy10 |  -.0087241   .0242033    -0.36   0.719    -.0561617    .0387136
 timedummy11 |  -.0073291    .028538    -0.26   0.797    -.0632625    .0486043
 timedummy12 |  -.1031691   .0416029    -2.48   0.013    -.1847093   -.0216289
 timedummy13 |  -.0348608   .0260282    -1.34   0.180    -.0858751    .0161535
       _cons |   1.887271   .5929837     3.18   0.001     .7250444    3.049498
------------------------------------------------------------------------------
Instruments for differenced equation
        GMM-type: L(2/.).lrealexp L(2/.).dlgdpcons_o
        Standard: D.dlgdpcons_d LD.lmig D.rta D.timedummy2 D.timedummy3 D.timedummy4 D.timedummy5 D.timedummy6 D.timedummy7 D.timedummy8
                  D.timedummy9 D.timedummy10 D.timedummy11 D.timedummy12
Instruments for level equation
        GMM-type: LD.lrealexp LD.dlgdpcons_o
        Standard: _cons
```

Dynamic specification-Imports

Table A5. Imports-Dynamic specification

Real (after elimination of insignificant or non-robust variables)

```
. xtdpdsys lrealimp dlgdpcons_d  lmig, lags(2) twostep endog(dlgdpcons_o) vce(robust) artests(2)

System dynamic panel-data estimation         Number of obs         =      5505
Group variable: newpairid                    Number of groups      =      1079
Time variable: year
                                             Obs per group:    min =         1
                                                               avg =  5.101946
                                                               max =        11

Number of instruments =    144               Wald chi2(5)          =   1647.90
                                             Prob > chi2           =    0.0000
Two-step results
```

lrealimp	Coef.	WC-Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
lrealimp						
L1.	.5442947	.1039413	5.24	0.000	.3405734	.7480159
L2.	.1882319	.0452213	4.16	0.000	.0995998	.2768639
dlgdpcons_o	2.372189	.2844618	8.34	0.000	1.814654	2.929723
dlgdpcons_d	.6437301	.3079266	2.09	0.037	.0402051	1.247255
lmig	.189248	.0925452	2.04	0.041	.0078628	.3706332
_cons	3.711817	1.695544	2.19	0.029	.3886111	7.035023

```
Instruments for differenced equation
        GMM-type: L(2/.).lrealimp L(2/.).dlgdpcons_o
        Standard: D.dlgdpcons_d D.lmig
Instruments for level equation
        GMM-type: LD.lrealimp LD.dlgdpcons_o
        Standard: _cons
```

Table A6. Imports-Dynamic specification, with time dummies

Real with time dummy variables (after elimination of insignificant or non-robust variables)

```
. xtdpdsys lrealimp dlgdpcons_d lmig  timedummy* rta, lags(2) twostep endog(dlgdpcons_o) vce(robust) artests(2)
note: timedummy1 dropped from div() because of collinearity
note: timedummy13 dropped from div() because of collinearity
note: timedummy1 dropped because of collinearity
note: timedummy2 dropped because of collinearity
note: timedummy6 dropped because of collinearity

System dynamic panel-data estimation         Number of obs         =      5505
Group variable: newpairid                    Number of groups      =      1079
Time variable: year
                                             Obs per group:    min =         1
                                                               avg =  5.101946
                                                               max =        11

Number of instruments =    155               Wald chi2(16)         =   1794.68
                                             Prob > chi2           =    0.0000
Two-step results
```

lrealimp	Coef.	WC-Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
lrealimp						
L1.	.4994945	.1239436	4.03	0.000	.2565694	.7424196
L2.	.172418	.0493776	3.49	0.000	.0756397	.2691963
dlgdpcons_o	1.691236	.3250909	5.20	0.000	1.05407	2.328403
dlgdpcons_d	-.0069782	.3157078	-0.02	0.982	-.6257541	.6117976
lmig	.2019369	.0966877	2.09	0.037	.0124325	.3914413
timedummy3	.0329887	.0324898	1.02	0.310	-.0306901	.0966675
timedummy4	-.0065335	.0322491	-0.20	0.839	-.0697405	.0566736
timedummy5	-.0108584	.0226184	-0.48	0.631	-.0551896	.0334728
timedummy7	-.0050728	.0259263	-0.20	0.845	-.0558874	.0457419
timedummy8	.0500032	.0214274	2.33	0.020	.0080063	.0920001
timedummy9	.0675456	.0386352	1.75	0.080	-.008178	.1432693
timedummy10	.0596673	.0308833	1.93	0.053	-.0008628	.1201974
timedummy11	.0685863	.0443471	1.55	0.122	-.0183325	.1555051
timedummy12	-.1000821	.0489485	-2.04	0.041	-.1960193	-.0041448
timedummy13	-.0031736	.0260876	-0.12	0.903	-.0543043	.0479571
rta	.0905524	.1009166	0.90	0.370	-.1072405	.2883453
_cons	4.707213	2.192341	2.15	0.032	.4103041	9.004121

```
Instruments for differenced equation
        GMM-type: L(2/.).lrealimp L(2/.).dlgdpcons_o
        Standard: D.dlgdpcons_d D.lmig D.timedummy2 D.timedummy3 D.timedummy4 D.timedummy5 D.timedummy6 D.timedummy7 D.timedummy8
                  D.timedummy9 D.timedummy10 D.timedummy11 D.timedummy12 D.rta
Instruments for level equation
        GMM-type: LD.lrealimp LD.dlgdpcons_o
        Standard: _cons
```

Static specification, Industry-level Exports (with interaction dummy variables)
Table A7: Exports

	Beverages				Crude Materials				Food and Live Animals			
	Fixed-effects (within) regression		obs. =	5178	Fixed-effects (within) regression		obs. =	5624	Fixed-effects (within) regression		obs. =	5606
	Group variable: newpairid		grps. =	979	Group variable: newpairid		grps. =	1016	Group variable: newpairid		grps. =	1032
	R-sq: within = 0.0960	obs./grps.	min =	1	R-sq: within = 0.1424	obs./grps.	min =	1	R-sq: within = 0.1379	obs./grps.	min =	1
	between = 0.4658		avg =	5.3	between = 0.3237		avg =	5.5	between = 0.3200		avg =	5.4
	overall = 0.4328		max =	13	overall = 0.3122		max =	13	overall = 0.3065		max =	13
			F(21,978) =	9.29			F(21,1015) =	13.39			F(21,1031) =	15.73
	corr(u_i, Xb) = -0.6150		Prob > F =	0	corr(u_i, Xb) = -0.5571		Prob > F =	0	corr(u_i, Xb) = -0.6587		Prob > F =	0
	Coef.	Robust Std. Err.	t	P>|t|	Coef.	Robust Std. Err.	t	P>|t|	Coef.	Robust Std. Err.	t	P>|t|
lmig	0.37	0.18	2.02	0.04	-0.13	0.10	-1.28	0.20	0.17	0.11	1.60	0.11
ldist	(omitted)				(omitted)				(omitted)			
lgdpcons_o	1.96	0.95	2.05	0.04	1.38	0.48	2.90	0.00	2.51	0.48	5.21	0.00
lgdpcons_d	1.21	0.47	2.57	0.01	1.59	0.40	3.97	0.00	0.35	0.34	1.04	0.30
contig	(omitted)				(omitted)				(omitted)			
colony	(omitted)				(omitted)				(omitted)			
comlang_et~o	(omitted)				(omitted)				(omitted)			
gatt_d	0.45	0.25	1.81	0.07	0.02	0.16	0.10	0.92	-0.09	0.16	-0.56	0.58
rta	0.07	0.15	0.50	0.62	0.30	0.14	2.07	0.04	-0.22	0.11	-1.99	0.05
comcur	-0.61	0.16	-3.77	0.00	-0.03	0.09	-0.37	0.71	-0.01	0.13	-0.04	0.97
lmigmpc	-0.42	0.50	-0.84	0.40	0.68	0.27	2.50	0.01	-0.03	0.28	-0.09	0.93
lmigeec	-0.07	0.19	-0.39	0.70	0.23	0.11	2.00	0.05	0.04	0.11	0.33	0.74
lmigasea	-0.75	0.41	-1.82	0.07	0.00	0.37	-0.01	1.00	0.20	0.59	0.34	0.73
_cons	-69.01	25.87	-2.67	0.01	-60.35	15.62	-3.86	0.00	-58.09	13.52	-4.30	0.00
sigma_u	3.06				3.00				3.46			
sigma_e	1.18				0.88				0.83			
rho	0.87				0.92				0.94			

	Machinery and Transport Equipment				Manufactured Goods Chiefly classified				Mineral Fuels and Lubricants			
	Fixed-effects (within) regression		obs. =	5921	Fixed-effects (within) regression		obs. =	5898	Fixed-effects (within) regression		obs. =	5158
	Group variable: newpairid		grps. =	1059	Group variable: newpairid		grps. =	1057	Group variable: newpairid		grps. =	932
	R-sq: within = 0.2445	obs./grps.	min =	1	R-sq: within = 0.1530	obs./grps.	min =	1	R-sq: within = 0.1041	obs./grps.	min =	1
	between = 0.6260		avg =	5.6	between = 0.4630		avg =	5.6	between = 0.2640		avg =	5.5
	overall = 0.6300		max =	13	overall = 0.4930		max =	13	overall = 0.2744		max =	13
			F(21,1058) =	29.65			F(21,1056) =	20.61			F(21,931) =	10.05
	corr(u_i, Xb) = -0.8683		Prob > F =	0	corr(u_i, Xb) = -0.1454		Prob > F =	0	corr(u_i, Xb) = -0.6439		Prob > F =	0
	Coef.	Robust Std. Err.	t	P>|t|	Coef.	Robust Std. Err.	t	P>|t|	Coef.	Robust Std. Err.	t	P>|t|
lmig	0.10	0.09	1.17	0.24	-0.13	0.08	-1.58	0.11	0.06	0.19	0.31	0.75
ldist	(omitted)				(omitted)				(omitted)			
lgdpcons_o	2.31	0.36	6.48	0.00	1.07	0.30	3.58	0.00	2.23	0.78	2.84	0.01
lgdpcons_d	2.43	0.23	10.45	0.00	1.28	0.21	5.98	0.00	2.04	0.61	3.33	0.00
contig	(omitted)				(omitted)				(omitted)			
colony	(omitted)				(omitted)				(omitted)			
comlang_et~o	(omitted)				(omitted)				(omitted)			
gatt_d	0.08	0.12	0.71	0.48	-0.13	0.08	-1.48	0.14	-0.14	0.22	-0.67	0.51
rta	0.10	0.09	1.06	0.29	0.04	0.06	0.60	0.55	-0.17	0.16	-1.04	0.30
comcur	-0.49	0.22	-2.27	0.02	-0.12	0.08	-1.56	0.12	-0.76	0.26	-2.97	0.00
lmigmpc	0.02	0.20	0.12	0.91	0.20	0.19	1.09	0.28	-0.52	0.38	-1.36	0.18
lmigeec	0.03	0.10	0.26	0.80	0.22	0.09	2.48	0.01	-0.10	0.20	-0.51	0.61
lmigasea	-0.46	0.18	-2.55	0.01	-0.06	0.16	-0.38	0.71	-1.07	0.53	-2.03	0.04
_cons	-10.24	1.02	-10.03	0.00	-42.13	7.96	-5.29	0.00	-94.14	2.32	-4.06	0.00
sigma_u	3.40				2.16				4.33			
sigma_e	0.60				0.53				1.46			
rho	0.97				0.95				0.9			

Static specification, Industry-level Imports (with interaction dummy variables)

Table A8: Imports

	Beverages				Crude Materials				Food and Live Animals			
	Fixed-effects (within) regression		obs. =	4929	Fixed-effects (within) regression		obs. =	5534	Fixed-effects (within) regression		obs. =	5622
	Group variable: newpairid		grps. =	948	Group variable: newpairid		grps. =	1033	Group variable: newpairid		grps. =	1032
	R-sq: within = 0.0699	obs./grps.	min =	1	R-sq: within = 0.0841	obs./grps.	min =	1	R-sq: within = 0.1448	obs./grps.	min =	1
	between = 0.0571		avg =	5.2	between = 0.3000		avg =	5.4	between = 0.0000		avg =	5.4
	overall = 0.0553		max =	13	overall = 0.2733		max =	13	overall = 0.0023		max =	13
			F(21,947) =	5.08			F(21,1032) =	10.58			F(21,1031) =	13.94
	corr(u_i, Xb) = -0.8101		Prob > F =	0	corr(u_i, Xb) = -0.3104		Prob > F =	0	corr(u_i, Xb) = -0.7009		Prob > F =	0
	Coef.	Robust Std. Err.	t	P>|t|	Coef.	Robust Std. Err.	t	P>|t|	Coef.	Robust Std. Err.	t	P>|t|
lmig	-0.24	0.16	-1.57	0.12	0.03	0.11	0.26	0.79	-0.02	0.09	-0.18	0.85
ldist	(omitted)				(omitted)				(omitted)			
lgdpcons_o	3.59	0.73	4.93	0.00	1.58	0.51	3.08	0.00	0.80	0.39	2.03	0.04
lgdpcons_d	0.27	0.66	0.41	0.68	0.34	0.39	0.87	0.39	-0.25	0.34	-0.72	0.47
contig	(omitted)				(omitted)				(omitted)			
colony	(omitted)				(omitted)				(omitted)			
comlang_et~o	(omitted)				(omitted)				(omitted)			
gatt_d	0.28	0.35	0.80	0.42	-0.04	0.23	-0.15	0.88	-0.46	0.16	-2.80	0.01
rta	0.07	0.25	0.29	0.77	0.26	0.14	1.83	0.07	0.11	0.14	0.75	0.46
comcur	-0.15	0.15	-0.95	0.34	-0.16	0.21	-0.78	0.43	-0.04	0.10	-0.38	0.71
lmigmpc	-0.99	0.44	-2.24	0.03	-0.22	0.29	-0.78	0.44	0.09	0.20	0.46	0.65
lmigeec	0.44	0.21	2.06	0.04	-0.04	0.13	-0.31	0.75	0.54	0.12	4.42	0.00
lmigasea	-0.03	0.57	-0.05	0.96	-0.68	0.28	-2.40	0.02	-0.56	0.15	-3.70	0.00
_cons	-83.87	23.38	-3.59	0.00	-33.12	1.60	-2.07	0.04	5.10	1.24	4.11	0.97
sigma_u	5.96				2.82				4.31			
sigma_e	1.31				0.91				0.82			
rho	0.95				0.91				0.96			

	Machinary and Transport Equipment				Manufactured Goods Chiefly classified				Mineral Fuels and Lubricants			
	Fixed-effects (within) regression		obs. =	5790	Fixed-effects (within) regression		obs. =	5799	Fixed-effects (within) regression		obs. =	4032
	Group variable: newpairid		grps. =	1061	Group variable: newpairid		grps. =	1054	Group variable: newpairid		grps. =	832
	R-sq: within = 0.1216	obs./grps.	min =	1	R-sq: within = 0.0830	obs./grps.	min =	1	R-sq: within = 0.0424	obs./grps.	min =	1
	between = 0.2055		avg =	5.5	between = 0.2368		avg =	5.5	between = 0.0025		avg =	4.8
	overall = 0.1570		max =	13	overall = 0.2329		max =	13	overall = 0.0009		max =	13
			F(21,1060) =	15.01			F(21,1053) =	15.65			F(21,831) =	7.91
	corr(u_i, Xb) = -0.4571		Prob > F =	0	corr(u_i, Xb) = 0.1732		Prob > F =	0	corr(u_i, Xb) = -0.6926		Prob > F =	0
	Coef.	Robust Std. Err.	t	P>|t|	Coef.	Robust Std. Err.	t	P>|t|	Coef.	Robust Std. Err.	t	P>|t|
lmig	-0.15	0.06	-2.25	0.03	-0.13	0.06	-2.27	0.02	0.28	0.15	1.80	0.07
ldist	(omitted)				(omitted)				(omitted)			
lgdpcons_o	1.95	0.43	4.58	0.00	0.60	0.37	1.63	0.10	1.52	0.92	1.65	0.10
lgdpcons_d	1.01	0.36	2.82	0.01	0.23	0.29	0.80	0.43	-0.40	0.82	-0.49	0.63
contig	(omitted)				(omitted)				(omitted)			
colony	(omitted)				(omitted)				(omitted)			
comlang_et~o	(omitted)				(omitted)				(omitted)			
gatt_d	-0.11	0.20	-0.55	0.59	-0.18	0.14	-1.30	0.19	0.06	0.45	0.13	0.90
rta	0.07	0.14	0.50	0.62	0.38	0.17	2.30	0.02	0.01	0.32	0.03	0.98
comcur	0.68	0.26	2.61	0.01	0.27	0.08	3.32	0.00	0.07	0.71	0.09	0.93
lmigmpc	0.37	0.26	1.42	0.16	-0.24	0.19	-1.25	0.21	0.42	0.37	1.14	0.25
lmigeec	0.39	0.08	4.54	0.00	0.16	0.08	2.09	0.04	-0.29	0.20	-1.43	0.15
lmigasea	-0.50	0.18	-2.80	0.01	-0.01	0.19	-0.07	0.95	1.23	1.25	0.98	0.33
_cons	-58.76	13.94	-4.22	0.00	-41.38	117.14	-0.35	0.72	-1.64	2.94	-0.56	0.58
sigma_u	3.81				3.14				6.01			
sigma_e	0.86				0.77				1.83			
rho	0.95				0.94				0.92			

Migration-Product Diversity

Change in Number of Enterprise

Y1= # of enterprise (t - (t-1))/ enterprise (t - 1)

X1= immigration from EEC (t - (t-1)) / total population (t - 1)

X2= immigration from MPC (t - (t-1))/ total population (t - 1)

X3= native people (t- (t-1))/ total population (t - 1)

X4= per labor renumeration

Table A9: Mining and quarrying-Change in Number of Enterprise 1

```
. xtreg y1 x1 x2 x3 x4, fe cluster(n)

Fixed-effects (within) regression               Number of obs      =       117
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.0269                         Obs per group: min =         9
       between = 0.1711                                        avg =       9.0
       overall = 0.0001                                        max =         9

                                                F(4,12)            =      2.01
corr(u_i, Xb)  = -0.6561                        Prob > F           =    0.1564

                                   (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
          y1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          x1 |  -5.826768   4.341554    -1.34   0.204     -15.2862    3.632664
          x2 |   1.659532   25.55738     0.06   0.949    -54.02521    57.34428
          x3 |  -10.20824   6.065679    -1.68   0.118    -23.42422    3.007742
          x4 |  -168.6257   697.3205    -0.24   0.813    -1687.957    1350.705
       _cons |   .0579442   .0276468     2.10   0.058    -.0022929    .1181814
-------------+----------------------------------------------------------------
     sigma_u |  .05449419
     sigma_e |  .13743415
         rho |    .135861   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =    1.0e+05
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =      6.916
           Prob > F =      0.0220
```

-population to replace X3:

Table A10: Mining and quarrying-Change in Number of Enterprise 2

```
. xtreg y1 x1 x2 dlnpop x4, fe cluster(n)

Fixed-effects (within) regression               Number of obs      =       117
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.0268                         Obs per group: min =         9
       between = 0.1709                                        avg =       9.0
       overall = 0.0001                                        max =         9

                                                F(4,12)            =      2.00
corr(u_i, Xb)  = -0.6552                        Prob > F           =    0.1588

                                   (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
          y1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          x1 |   4.373359   6.279704     0.70   0.499     -9.30894    18.05566
          x2 |   11.90253   21.68721     0.55   0.593    -35.34984     59.1549
      dlnpop |  -10.25921   6.122394    -1.68   0.120    -23.59877    3.080335
          x4 |  -168.3632   697.7702    -0.24   0.813    -1688.674    1351.947
       _cons |   .0580071   .0278091     2.09   0.059    -.0025838     .118598
-------------+----------------------------------------------------------------
     sigma_u |  .05441326
     sigma_e |  .13744015
         rho |  .13550214   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

```
Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =      6.913
           Prob > F =      0.0220
```

Table A11: Food products, beverages and tobacco-Change in Number of Enterprise 1

```
. xtreg y1 x1 x2 x3 x4, fe cluster(n)

Fixed-effects (within) regression               Number of obs      =       117
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.1123                         Obs per group: min =         9
       between = 0.0867                                        avg =       9.0
       overall = 0.0088                                        max =         9

                                                F(4,12)            =      1.02
corr(u_i, Xb)  = -0.6946                        Prob > F           =    0.4344

                                  (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
          y1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          x1 |  -4.031638   5.348209    -0.75   0.465    -15.68439    7.621109
          x2 |  -7.759379   9.092318    -0.85   0.410    -27.56984    12.05108
          x3 |  -7.932472    4.96296    -1.60   0.136    -18.74583     2.88089
          x4 |  -25.99093   70.89335    -0.37   0.720    -180.4543    128.4724
       _cons |   .0367635   .0236685     1.55   0.146    -.0148057    .0883327
-------------+----------------------------------------------------------------
     sigma_u |  .03452333
     sigma_e |  .04870615
         rho |  .33440243   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =      455.39
Prob>chi2 =       0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =      8.757
           Prob > F =      0.0119
```

-population to replace X3:

Table A12: Food products, beverages and tobacco-Change in Number of Enterprise 2

```
. xtreg y1 x1 x2 dlnpop x4, fe cluster(n)

Fixed-effects (within) regression               Number of obs      =       117
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.1118                         Obs per group: min =         9
       between = 0.0865                                        avg =       9.0
       overall = 0.0088                                        max =         9

                                                F(4,12)            =      1.02
corr(u_i, Xb)  = -0.6936                        Prob > F           =    0.4375

                                  (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
          y1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          x1 |   3.893652      3.048     1.28   0.226    -2.747369    10.53467
          x2 |   .1969173   6.414461     0.03   0.976    -13.77899    14.17283
      dlnpop |  -7.966934   5.006066    -1.59   0.137    -18.87421    2.940346
          x4 |  -25.99496   70.89298    -0.37   0.720    -180.4575    128.4676
       _cons |   .0367886   .0237865     1.55   0.148    -.0150377    .0886149
-------------+----------------------------------------------------------------
     sigma_u |  .03444213
     sigma_e |  .04872016
         rho |  .33322728   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =      455.61
Prob>chi2 =       0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =      8.767
           Prob > F =      0.0119
```

Table A13: Light Manufacturing-Change in Number of Enterprise 1

```
. xtreg y1 x1 x2 x3 x4, fe robust

Fixed-effects (within) regression               Number of obs      =       117
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.0830                         Obs per group: min =         9
       between = 0.3552                                        avg =       9.0
       overall = 0.0001                                        max =         9

                                                F(4,12)            =      2.13
corr(u_i, Xb)  = -0.7425                        Prob > F           =    0.1403

                                    (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
          y1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          x1 |  -6.573976    6.08823    -1.08   0.301    -19.83909    6.691138
          x2 |   3.052589   18.65288     0.16   0.873    -37.58856    43.69373
          x3 |  -8.273735   5.802511    -1.43   0.179    -20.91632    4.368849
          x4 |  -6.181712   6.079219    -1.02   0.329    -19.42719    7.063767
       _cons |   .0425391   .0276283     1.54   0.150    -.0176578     .102736
-------------+----------------------------------------------------------------
     sigma_u |  .03979577
     sigma_e |  .06080702
         rho |  .29987581   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =    1492.19
Prob>chi2 =      0.0000

. xtserial y1 x1 x2 x3 x4

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =      0.862
           Prob > F =      0.3715
```

-population to replace X3:

Table A14: Light Manufacturing-Change in Number of Enterprise 2

```
. xtreg y1 x1 x2 dlnpop x4, fe robust

Fixed-effects (within) regression               Number of obs      =       117
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.0825                         Obs per group: min =         9
       between = 0.3548                                        avg =       9.0
       overall = 0.0001                                        max =         9

                                                F(4,12)            =      2.12
corr(u_i, Xb)  = -0.7416                        Prob > F           =    0.1405

                                    (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
          y1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          x1 |    1.69095   2.821764     0.60   0.560    -4.457145    7.839045
          x2 |   11.34707   17.35261     0.65   0.526    -26.46103    49.15517
      dlnpop |  -8.302548   5.846965    -1.42   0.181    -21.04199    4.436894
          x4 |   -6.18658   6.084441    -1.02   0.329    -19.44344    7.070279
       _cons |   .0425318   .0277374     1.53   0.151    -.0179027    .1029664
-------------+----------------------------------------------------------------
     sigma_u |  .03968709
     sigma_e |   .0608237
         rho |   .2986139   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =    1499.82
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =      0.863
           Prob > F =      0.3712
```

Table A15: Heavy Manufacturing-Change in Number of Enterprise 1

```
. xtreg y1 x1 x2 x3 x4, fe robust

Fixed-effects (within) regression               Number of obs      =       117
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.0661                         Obs per group: min =         9
       between = 0.3753                                        avg =       9.0
       overall = 0.0000                                        max =         9

                                                F(4,12)            =      1.14
corr(u_i, Xb)  = -0.7605                        Prob > F           =    0.3823

                                    (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
          y1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          x1 |  -8.223834   9.063605    -0.91   0.382    -27.97173    11.52406
          x2 |  -6.546893   16.15217    -0.41   0.692    -41.73945    28.64566
          x3 |  -10.94569   8.334354    -1.31   0.214    -29.10468    7.213313
          x4 |   9.035625   17.56219     0.51   0.616     -29.2291    47.30036
       _cons |   .0624857   .0389713     1.60   0.135    -.0224255    .1473969
-------------+----------------------------------------------------------------
     sigma_u |  .05321628
     sigma_e |  .08880177
         rho |  .26423253   (fraction of variance due to u_i)
------------------------------------------------------------------------------


Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =     4612.87
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =      2.121
           Prob > F =      0.1710
```

-population to replace X3:

Table A16: Heavy Manufacturing-Change in Number of Enterprise 2

```
. xtreg y1 x1 x2 dlnpop x4, fe robust

Fixed-effects (within) regression               Number of obs      =       117
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.0657                         Obs per group: min =         9
       between = 0.3747                                        avg =       9.0
       overall = 0.0000                                        max =         9

                                                F(4,12)            =      1.14
corr(u_i, Xb)  = -0.7597                        Prob > F           =    0.3847

                                    (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
          y1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          x1 |   2.709526   2.313085     1.17   0.264    -2.330254    7.749306
          x2 |   4.426297   13.77891     0.32   0.754    -25.59537    34.44796
      dlnpop |  -10.98072   8.396302    -1.31   0.215    -29.27469    7.313251
          x4 |   9.019426   17.58479     0.51   0.617    -29.29454    47.33339
       _cons |   .0624628   .0391175     1.60   0.136    -.0227669    .1476926
-------------+----------------------------------------------------------------
     sigma_u |  .05306015
     sigma_e |  .08882349
         rho |  .26299686   (fraction of variance due to u_i)
------------------------------------------------------------------------------


Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =     4624.00
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =      2.122
           Prob > F =      0.1708
```

Table A17: Electricity, gas and water supply-Change in Number of Enterprise 1

```
. xtreg y1 x1 x2 x3 x4, fe robust

Fixed-effects (within) regression               Number of obs      =       117
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.0218                         Obs per group: min =         9
       between = 0.7302                                        avg =       9.0
       overall = 0.0052                                        max =         9

                                                F(4,12)            =      1.66
corr(u_i, Xb)  = -0.3756                        Prob > F           =    0.2227

                                    (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
          y1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          x1 |   9.873084   9.612618     1.03   0.325    -11.07101    30.81718
          x2 |  -71.99488   63.97854    -1.13   0.282    -211.3921    67.40238
          x3 |  -2.101343   6.856709    -0.31   0.765    -17.04083    12.83814
          x4 |   155.3505   74.64255     2.08   0.059    -7.281657    317.9826
       _cons |   .0832857    .033065     2.52   0.027     .0112432    .1553282
-------------+----------------------------------------------------------------
     sigma_u |  .09318541
     sigma_e |  .14557684
         rho |  .29065074   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =   20460.87
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =      4.375
           Prob > F =      0.0584
```

-population to replace X3:

Table A18: Electricity, gas and water supply-Change in Number of Enterprise 2

```
. xtreg y1 x1 x2 dlnpop x4, fe robust

Fixed-effects (within) regression               Number of obs      =       117
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.0218                         Obs per group: min =         9
       between = 0.7285                                        avg =       9.0
       overall = 0.0050                                        max =         9

                                                F(4,12)            =      1.66
corr(u_i, Xb)  = -0.3725                        Prob > F           =    0.2231

                                    (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
          y1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          x1 |   11.96826   11.39977     1.05   0.314    -12.86971    36.80623
          x2 |  -69.90366   58.64509    -1.19   0.256    -197.6803    57.87302
      dlnpop |  -2.085556   6.902023    -0.30   0.768    -17.12377    12.95266
          x4 |   155.2001   74.76407     2.08   0.060    -7.696843     318.097
       _cons |   .0831761   .0331592     2.51   0.027     .0109284    .1554239
-------------+----------------------------------------------------------------
     sigma_u |  .09309845
     sigma_e |  .14557879
         rho |  .29026035   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =   20495.99
Prob>chi2 =      0.0000


Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =      4.379
           Prob > F =      0.0583
```

Table A19: Construction-Change in Number of Enterprise 1

```
. xtreg y1 x1 x2 x3 x4, fe robust

Fixed-effects (within) regression               Number of obs      =       117
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.0270                         Obs per group: min =         9
       between = 0.1338                                        avg =       9.0
       overall = 0.0028                                        max =         9

                                                F(4,12)            =      2.11
corr(u_i, Xb)  = -0.4407                        Prob > F           =    0.1430

                                   (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
          y1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          x1 |  -125.3513   88.42307    -1.42   0.182    -318.0086    67.30605
          x2 |   111.4848   82.70509     1.35   0.203     -68.7141    291.6837
          x3 |  -9.498347   20.37069    -0.47   0.649    -53.88226    34.88556
          x4 |   505.4124   530.5841     0.95   0.360     -650.631    1661.456
       _cons |   .1166163   .0681508     1.71   0.113    -.0318715    .2651042
-------------+----------------------------------------------------------------
     sigma_u |  .31570407
     sigma_e |  .87960284
         rho |  .11412006   (fraction of variance due to u_i)
------------------------------------------------------------------------------


Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =     5.0e+06
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =      0.645
           Prob > F =      0.4374
```

-population to replace X3:

Table A20: Construction-Change in Number of Enterprise 2

```
. xtreg y1 x1 x2 dlnpop x4, fe robust

Fixed-effects (within) regression               Number of obs      =       117
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.0270                         Obs per group: min =         9
       between = 0.1335                                        avg =       9.0
       overall = 0.0028                                        max =         9

                                                F(4,12)            =      2.11
corr(u_i, Xb)  = -0.4409                        Prob > F           =    0.1419

                                   (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
          y1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          x1 |  -115.8434   69.95987    -1.66   0.124    -268.2728    36.58608
          x2 |   121.0402   97.83871     1.24   0.240      -92.132    334.2125
      dlnpop |  -9.631268   20.55267    -0.47   0.648    -54.41168    35.14915
          x4 |   505.5811   530.6386     0.95   0.360    -650.5812    1661.743
       _cons |     .11706   .0686185     1.71   0.114     -.032447    .2665669
-------------+----------------------------------------------------------------
     sigma_u |   .3157346
     sigma_e |  .87959954
         rho |  .11414037   (fraction of variance due to u_i)
------------------------------------------------------------------------------


Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =     5.0e+06
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =      0.644
           Prob > F =      0.4377
```

Table A21: W/sale, Retail Trade; Hotels and Rest.-Change in Number of Enterprise 1

```
. xtreg y1 x1 x2 x3 x4, fe robust

Fixed-effects (within) regression               Number of obs      =       117
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.0776                         Obs per group: min =         9
       between = 0.0463                                        avg =       9.0
       overall = 0.0134                                        max =         9

                                                F(4,12)            =      1.13
corr(u_i, Xb)  = -0.6618                        Prob > F           =    0.3887

                                    (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
          y1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          x1 |  -79.26534   55.95004    -1.42   0.182       -201.17    42.63933
          x2 |   64.30553   135.1499     0.48   0.643     -230.1607    358.7718
          x3 |    -77.174   49.84077    -1.55   0.147     -185.7677    31.41971
          x4 |   148.0758   163.7172     0.90   0.384     -208.6334     504.785
       _cons |    .437367   .2184764     2.00   0.068     -.0386522    .9133862
-------------+----------------------------------------------------------------
     sigma_u |   .3327484
     sigma_e |  .65201447
         rho |  .20662995   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =   83693.93
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =      2.985
           Prob > F =      0.1097
```

-population to replace X3:

Table A22: W/sale, Retail Trade; Hotels and Rest.-Change in Number of Enterprise 2

```
. xtreg y1 x1 x2 dlnpop x4, fe robust

Fixed-effects (within) regression               Number of obs      =       117
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.0772                         Obs per group: min =         9
       between = 0.0455                                        avg =       9.0
       overall = 0.0135                                        max =         9

                                                F(4,12)            =      1.12
corr(u_i, Xb)  = -0.6602                        Prob > F           =    0.3924

                                    (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
          y1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          x1 |  -2.176243   17.29201    -0.13   0.902      -39.8523    35.49982
          x2 |   141.6776   120.5037     1.18   0.263     -120.8775    404.2327
      dlnpop |  -77.44784   50.24963    -1.54   0.149     -186.9324    32.03669
          x4 |   148.1915   163.9207     0.90   0.384      -208.961     505.344
       _cons |   .4372917   .2194712     1.99   0.070      -.040895    .9154783
-------------+----------------------------------------------------------------
     sigma_u |  .33164945
     sigma_e |  .65214724
         rho |  .20548095   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =   83905.07
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =      2.987
           Prob > F =      0.1096
```

Number of Enterprise

Y= # of enterprise

Y2=share of immigration from EEC in total population

Y3= share of immigration from MPC in total population

Y4= share of natives in total population

Y5=renumeration paid to employees

Table A23: Mining and quarrying-Number of Enterprise 1

```
. xtreg y y2 y3 y4 y5, fe robust

Fixed-effects (within) regression               Number of obs      =       130
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.0579                         Obs per group: min =        10
       between = 0.1932                                        avg =      10.0
       overall = 0.1829                                        max =        10

                                                F(3,12)            =      1.30
corr(u_i, Xb)  = -0.5479                        Prob > F           =    0.3181

                                    (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          y2 |  (dropped)
          y3 |   57.05161   54.80186     1.04   0.318    -62.35139    176.4546
          y4 |   .0229511   6.276368     0.00   0.997    -13.65208    13.69798
          y5 |  -.1411431   .0956351    -1.48   0.166    -.3495141    .0672278
       _cons |   7.644037   6.081973     1.26   0.233    -5.607444    20.89552
-------------+----------------------------------------------------------------
     sigma_u |  1.1216383
     sigma_e |  .10928668
         rho |  .99059573   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =    26579.48
Prob>chi2  =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =      0.390
           Prob > F =      0.5442
```

-population to replace Y4:

Table A24: Mining and quarrying-Number of Enterprise 2

```
. xtreg y y2 y3 lnpop y5, fe robust

Fixed-effects (within) regression               Number of obs      =       130
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.0800                         Obs per group: min =        10
       between = 0.5362                                        avg =      10.0
       overall = 0.5311                                        max =        10

                                                F(4,12)            =      2.41
corr(u_i, Xb)  = -0.4292                        Prob > F           =    0.1073

                                    (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          y2 |  -3.638216   5.834633    -0.62   0.545    -16.35079    9.074356
          y3 |   34.97832   42.00829     0.83   0.421    -56.54987    126.5065
       lnpop |   1.228025   .8293968     1.48   0.164    -.5790752    3.035126
          y5 |   -.200024   .0860342    -2.32   0.038    -.3874764   -.0125715
       _cons |  -12.46872   13.87289    -0.90   0.386    -42.69514    17.75771
-------------+----------------------------------------------------------------
     sigma_u |     .78336
     sigma_e |    .108479
         rho |  .98118435   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

```
Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =    1.2e+05
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =      0.386
           Prob > F =      0.5462
```

Table A25: Food products, beverages and tobacco-Number of Enterprise 1

```
. xtreg y y2 y3 y4 y5, fe cluster(n)

Fixed-effects (within) regression               Number of obs      =       130
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.0057                         Obs per group: min =        10
       between = 0.0200                                        avg =      10.0
       overall = 0.0197                                        max =        10

                                                F(3,12)            =      0.13
corr(u_i, Xb)  = 0.1155                         Prob > F           =    0.9433

                                  (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          y2 |  (dropped)
          y3 |   14.96854   30.24585     0.49   0.630    -50.93149    80.86858
          y4 |   1.773957   7.772036     0.23   0.823    -15.15985    18.70777
          y5 |   .0283705   .1679819     0.17   0.869    -.3376306    .3943715
       _cons |   6.960836   8.378046     0.83   0.422    -11.29336    25.21503
-------------+----------------------------------------------------------------
     sigma_u |   1.263439
     sigma_e |  .06283051
         rho |  .99753305   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =    3518.76
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =    116.156
           Prob > F =      0.0000
```

-population to replace Y4:

Table A26: Food products, beverages and tobacco-Number of Enterprise 2

```
. xtreg y y2 y3 lnpop y5, fe cluster(n)

Fixed-effects (within) regression               Number of obs      =       130
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.1332                         Obs per group: min =        10
       between = 0.2961                                        avg =      10.0
       overall = 0.2952                                        max =        10

                                                F(4,12)            =      3.37
corr(u_i, Xb)  = -0.9233                        Prob > F           =    0.0457

                                  (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          y2 |   .9524156   5.921495     0.16   0.875    -11.94941    13.85425
          y3 |   36.12232   24.29297     1.49   0.163     -16.8075    89.05215
       lnpop |  -1.924329   .6554344    -2.94   0.012    -3.352398   -.4962599
          y5 |   .2597026   .1794004     1.45   0.173    -.1311773    .6505824
       _cons |   38.91689   10.77939     3.61   0.004     15.43063    62.40316
-------------+----------------------------------------------------------------
     sigma_u |   2.770297
     sigma_e |  .05892272
         rho |  .99954781   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =    1117.95
Prob>chi2 =      0.0000
```

```
Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =     74.833
           Prob > F =      0.0000
```

Table A27: Light Manufacturing-Number of Enterprise 1

```
. xtreg y y2 y3 y4 y5, fe cluster(n)

Fixed-effects (within) regression               Number of obs      =       130
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.0856                         Obs per group: min =        10
       between = 0.1526                                        avg =      10.0
       overall = 0.1481                                        max =        10

                                                F(3,12)            =      3.20
corr(u_i, Xb)  = 0.3081                         Prob > F           =    0.0620

                                   (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          y2 |  (dropped)
          y3 |    67.7337   25.44937     2.66   0.021     12.28429    123.1831
          y4 |   8.074565   7.744295     1.04   0.318    -8.798805    24.94793
          y5 |   .0576428   .1150632     0.50   0.625    -.1930584    .3083439
       _cons |    2.07946   8.174465     0.25   0.804    -15.73117    19.89009
-------------+----------------------------------------------------------------
     sigma_u |  1.0092067
     sigma_e |   .0645627
         rho |  .99592405   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =    1744.71
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =     16.848
           Prob > F =      0.0015
```

-population to replace Y4:

Table A28: Light Manufacturing-Number of Enterprise 2

```
. xtreg y y2 y3 lnpop y5, fe cluster(n)

Fixed-effects (within) regression               Number of obs      =       130
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.0882                         Obs per group: min =        10
       between = 0.7037                                        avg =      10.0
       overall = 0.6998                                        max =        10

                                                F(4,12)            =      3.01
corr(u_i, Xb)  = 0.7189                         Prob > F           =    0.0620

                                   (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          y2 |   -9.00969    8.78185    -1.03   0.325     -28.1437    10.12432
          y3 |   56.87239   24.16504     2.35   0.036     4.221287    109.5235
       lnpop |   .2363639   .9073443     0.26   0.799     -1.74057    2.213297
          y5 |   .0480182   .1346873     0.36   0.728    -.2454403    .3414767
       _cons |   6.299223   14.29853     0.44   0.667    -24.85459    37.45304
-------------+----------------------------------------------------------------
     sigma_u |  .81669045
     sigma_e |  .06475375
         rho |  .99375269   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =    1866.58
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =     16.958
           Prob > F =      0.0014
```

Table A29: Heavy Manufacturing-Number of Enterprise 1

```
. xtreg y y2 y3 y4 y5, fe cluster(n)

Fixed-effects (within) regression               Number of obs      =       130
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.1057                         Obs per group: min =        10
       between = 0.1674                                        avg =      10.0
       overall = 0.1669                                        max =        10

                                                F(3,12)            =      2.99
corr(u_i, Xb)  = 0.0615                         Prob > F           =    0.0734

                                  (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          y2 |  (dropped)
          y3 |   59.57072   37.16355     1.60   0.135    -21.40171    140.5431
          y4 |   6.699602   6.221693     1.08   0.303    -6.856302    20.25551
          y5 |   .2342892   .1474163     1.59   0.138    -.0869033    .5554817
       _cons |   1.096298    6.65911     0.16   0.872    -13.41266    15.60525
-------------+----------------------------------------------------------------
     sigma_u |  .89807179
     sigma_e |  .08422153
         rho |  .99128191   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =     5594.64
Prob>chi2 =       0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =     82.633
           Prob > F =      0.0000
```

-population to replace Y4:

Table A30: Heavy Manufacturing-Number of Enterprise 2

```
. xtreg y y2 y3 lnpop y5, fe cluster(n)

Fixed-effects (within) regression               Number of obs      =       130
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.1309                         Obs per group: min =        10
       between = 0.8486                                        avg =      10.0
       overall = 0.8430                                        max =        10

                                                F(4,12)            =      4.62
corr(u_i, Xb)  = -0.6613                        Prob > F           =    0.0172

                                  (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          y2 |  -9.474203   8.753762    -1.08   0.300    -28.54701    9.598606
          y3 |   42.31306   36.79089     1.15   0.273     -37.8474    122.4735
       lnpop |   1.136907   1.505808     0.76   0.465    -2.143968    4.417781
          y5 |   .1156315   .2296331     0.50   0.624     -.384696     .615959
       _cons |   -10.0462   23.45318    -0.43   0.676    -61.14629    41.05389
-------------+----------------------------------------------------------------
     sigma_u |   .5096059
     sigma_e |  .08339402
         rho |  .97391903   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =     2493.92
Prob>chi2 =       0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =     80.735
           Prob > F =      0.0000
```

Table A31: Electricity, gas and water supply-Number of Enterprise 1

```
. xtreg y y2 y3 y4 y5, fe cluster(n)

Fixed-effects (within) regression               Number of obs      =       130
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.2932                         Obs per group: min =        10
       between = 0.3980                                        avg =      10.0
       overall = 0.3921                                        max =        10

                                                F(3,12)            =      2.73
corr(u_i, Xb)  = -0.3329                        Prob > F           =    0.0903

                                   (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          y2 |  (dropped)
          y3 |   167.4189    134.804     1.24   0.238    -126.2938    461.1317
          y4 |  -14.78333   34.32633    -0.43   0.674    -89.57399    60.00732
          y5 |   1.037758   .3914173     2.65   0.021     .1849326    1.890582
       _cons |   13.09371   35.03086     0.37   0.715    -63.23199    89.41941
-------------+----------------------------------------------------------------
     sigma_u |  1.0201014
     sigma_e |  .23155369
         rho |  .95099988   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =     1077.35
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =     18.549
           Prob > F =      0.0010
```

-population to replace Y4:

Table A32: Electricity, gas and water supply-Number of Enterprise 2

```
. xtreg y y2 y3 lnpop y5, fe cluster(n)

Fixed-effects (within) regression               Number of obs      =       130
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.7159                         Obs per group: min =        10
       between = 0.1065                                        avg =      10.0
       overall = 0.1036                                        max =        10

                                                F(4,12)            =    324.03
corr(u_i, Xb)  = -0.9958                        Prob > F           =    0.0000

                                   (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          y2 |  -29.32887   10.99351    -2.67   0.020    -53.28167   -5.376074
          y3 |   5.519625   104.4741     0.05   0.959    -222.1098    233.1491
       lnpop |   13.10346   2.226795     5.88   0.000     8.251685    17.95523
          y5 |   .2081023   .2141403     0.97   0.350    -.2584693    .6746738
       _cons |  -214.0661   36.42509    -5.88   0.000    -293.4296   -134.7026
-------------+----------------------------------------------------------------
     sigma_u |  13.043973
     sigma_e |  .14744217
         rho |  .99987225   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =    47214.16
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =     16.988
           Prob > F =      0.0014
```

Table A33: Construction-Number of Enterprise 1

```
. xtreg y y2 y3 y4 y5, fe robust

Fixed-effects (within) regression               Number of obs      =       130
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.5451                         Obs per group: min =        10
       between = 0.1965                                        avg =      10.0
       overall = 0.2057                                        max =        10

                                                F(3,12)            =      7.02
corr(u_i, Xb)  = -0.5383                        Prob > F           =    0.0056

                                    (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          y2 |  (dropped)
          y3 |  -47.18967   65.83421    -0.72   0.487    -190.6301    96.25075
          y4 |   4.360879   10.79596     0.40   0.693     -19.1615    27.88326
          y5 |   .9673917   .3217963     3.01   0.011     .2662577    1.668526
       _cons |   -2.20785   9.087008    -0.24   0.812    -22.00674    17.59104
-------------+----------------------------------------------------------------
     sigma_u |  1.1208527
     sigma_e |  .17021871
         rho |  .97745683   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =     2459.00
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =      1.985
           Prob > F =      0.1842
```

-population to replace Y4:

Table A34: Construction-Number of Enterprise 2

```
. xtreg y y2 y3 lnpop y5, fe robust

Fixed-effects (within) regression               Number of obs      =       130
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.5669                         Obs per group: min =        10
       between = 0.7632                                        avg =      10.0
       overall = 0.7043                                        max =        10

                                                F(4,12)            =      9.63
corr(u_i, Xb)  = -0.9909                        Prob > F           =    0.0010

                                    (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          y2 |   3.919681   19.00681     0.21   0.840     -37.4926    45.33196
          y3 |    -16.589   33.02559    -0.50   0.625    -88.54559    55.36759
       lnpop |  -3.649449   5.122851    -0.71   0.490    -14.81118    7.512284
          y5 |   1.189026   .5922804     2.01   0.068    -.1014416    2.479495
       _cons |    61.0255   80.08325     0.76   0.461    -113.4609    235.5119
-------------+----------------------------------------------------------------
     sigma_u |  4.1685117
     sigma_e |  .16682626
         rho |  .99840091   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =    23714.64
Prob>chi2 =       0.0000


Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =      2.194
           Prob > F =      0.1643
```

Table A35: W/sale, Retail Trade; Hotels and Rest.-Number of Enterprise 1

```
. xtreg y y2 y3 y4 y5, fe robust

Fixed-effects (within) regression               Number of obs      =       130
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.3857                         Obs per group: min =        10
       between = 0.0766                                        avg =      10.0
       overall = 0.0897                                        max =        10

                                                F(3,12)            =     22.93
corr(u_i, Xb)  = -0.3298                        Prob > F           =    0.0000

                                  (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          y2 |  (dropped)
          y3 |   77.53143   81.46885     0.95   0.360    -99.97394    255.0368
          y4 |   14.88023   18.35249     0.81   0.433    -25.10642    54.86687
          y5 |   .5660977   .1333706     4.24   0.001     .2755081    .8566873
       _cons |  -8.416104   18.19901    -0.46   0.652    -48.06834    31.23613
-------------+----------------------------------------------------------------
     sigma_u |  1.0183462
     sigma_e |  .21391487
         rho |  .95773915   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =    15654.74
Prob>chi2 =      0.0000


Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =      1.819
           Prob > F =      0.2024
```

-population to replace Y4:

Table A36: W/sale, Retail Trade; Hotels and Rest.-Number of Enterprise 2

```
. xtreg y y2 y3 lnpop y5, fe robust

Fixed-effects (within) regression               Number of obs      =       130
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.4010                         Obs per group: min =        10
       between = 0.8342                                        avg =      10.0
       overall = 0.7562                                        max =        10

                                                F(4,12)            =     17.13
corr(u_i, Xb)  = -0.9909                        Prob > F           =    0.0001

                                  (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          y2 |  -8.147728   16.05847    -0.51   0.621    -43.13613    26.84067
          y3 |   85.05002   55.94763     1.52   0.154     -36.8494    206.9494
       lnpop |  -2.750414   1.638235    -1.68   0.119    -6.319822    .8189943
          y5 |   .6594793   .1564379     4.22   0.001     .3186303    1.000328
       _cons |   51.43497   26.17944     1.96   0.073    -5.605128    108.4751
-------------+----------------------------------------------------------------
     sigma_u |  3.4565356
     sigma_e |  .21217494
         rho |  .99624619   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =    12049.45
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =      1.721
           Prob > F =      0.2141
```

Change in Employment

Y1= # in employment (t - (t-1))/ employment (t - 1)

X1=immigrants from EEC (t - (t-1)) / total population (t - 1)

X2= immigrants from MPC (t - (t-1))/ total population (t - 1)

X3= native people (t- (t-1))/ total population (t - 1)

Table A37: Mining and quarrying-Change in Employment 1

```
. xtreg y1 x1 x2 x3, fe robust

Fixed-effects (within) regression               Number of obs      =       117
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.0047                         Obs per group: min =         9
       between = 0.0339                                        avg =       9.0
       overall = 0.0002                                        max =         9

                                                F(3,12)            =      0.50
corr(u_i, Xb)  = -0.3223                        Prob > F           =    0.6872

                                  (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
          y1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          x1 |   2.828564   3.138674     0.90   0.385    -4.010019    9.667146
          x2 |  -12.45903   15.24799    -0.82   0.430    -45.68155    20.76348
          x3 |   2.131668   2.394258     0.89   0.391    -3.084972    7.348308
       _cons |  -.0185745   .0113436    -1.64   0.127    -.0432902    .0061412
-------------+----------------------------------------------------------------
     sigma_u |  .02137637
     sigma_e |  .08437394
         rho |   .0603161   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =      690.87
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =      0.258
           Prob > F =      0.6207
```

-population to replace X3

Table A38: Mining and quarrying-Change in Employment 2

```
. xtreg y1 x1 x2 dlnpop, fe robust

Fixed-effects (within) regression               Number of obs      =       117
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.0048                         Obs per group: min =         9
       between = 0.0341                                        avg =       9.0
       overall = 0.0002                                        max =         9

                                                F(3,12)            =      0.51
corr(u_i, Xb)  = -0.3234                        Prob > F           =    0.6858

                                  (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
          y1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          x1 |   .6957452   1.968906     0.35   0.730    -3.594132    4.985622
          x2 |  -14.60521   15.56878    -0.94   0.367    -48.52667    19.31625
      dlnpop |   2.156283   2.412193     0.89   0.389    -3.099435       7.412
       _cons |  -.0186534   .0113866    -1.64   0.127    -.0434627    .0061559
-------------+----------------------------------------------------------------
     sigma_u |  .02138914
     sigma_e |  .08437272
         rho |  .06038544   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =      690.92
Prob>chi2 =      0.0000
```

```
Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =      0.258
           Prob > F =      0.6206
```

Table A39: Food products, beverages and tobacco-Change in Employment 1

```
. xtreg y1 x1 x2 x3, fe cluster(n)

Fixed-effects (within) regression               Number of obs      =       117
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.0063                         Obs per group: min =         9
       between = 0.0862                                        avg =       9.0
       overall = 0.0007                                        max =         9

                                                F(3,12)            =      1.54
corr(u_i, Xb)  = -0.4715                        Prob > F           =    0.2553

                                   (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
          y1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          x1 |  -1.517677   2.958406    -0.51   0.617     -7.96349    4.928136
          x2 |  -1.261237   11.34956    -0.11   0.913    -25.98981    23.46734
          x3 |  -1.539014   .8212806    -1.87   0.085    -3.328431    .2504024
       _cons |    .002266   .0037843     0.60   0.560    -.0059793    .0105113
-------------+----------------------------------------------------------------
     sigma_u |  .01449154
     sigma_e |  .04207326
         rho |  .10605427   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =      230.21
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =      5.408
           Prob > F =      0.0384
```

-population to replace X3

Table A40: Food products, beverages and tobacco-Change in Employment 1

```
. xtreg y1 x1 x2 dlnpop, fe cluster(n)

Fixed-effects (within) regression               Number of obs      =       117
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.0063                         Obs per group: min =         9
       between = 0.0860                                        avg =       9.0
       overall = 0.0007                                        max =         9

                                                F(3,12)            =      1.53
corr(u_i, Xb)  = -0.4709                        Prob > F           =    0.2562

                                   (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
          y1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          x1 |   .0206653   2.801857     0.01   0.994    -6.084057    6.125388
          x2 |   .2843025   11.73508     0.02   0.981    -25.28424    25.85285
      dlnpop |    -1.5493   .8271909    -1.87   0.086    -3.351595    .2529939
       _cons |   .0022878    .003798     0.60   0.558    -.0059872    .0105628
-------------+----------------------------------------------------------------
     sigma_u |  .01448657
     sigma_e |  .04207326
         rho |  .10598923   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =      230.26
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =      5.412
           Prob > F =      0.0383
```

Table A41: Light Manufacturing-Change in Employment 1

```
. xtreg y1 x1 x2 x3, fe robust

Fixed-effects (within) regression               Number of obs      =       117
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.0210                         Obs per group: min =         9
       between = 0.0083                                        avg =       9.0
       overall = 0.0045                                        max =         9

                                                F(3,12)            =      1.19
corr(u_i, Xb)  = -0.4036                        Prob > F           =    0.3560

                                   (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
          y1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          x1 |   -7.18586   7.670385    -0.94   0.367    -23.89819    9.526474
          x2 |   18.71142   15.97737     1.17   0.264    -16.10028    53.52312
          x3 |  -4.340812   2.360225    -1.84   0.091    -9.483301    .8016767
       _cons |   .0143627   .0111306     1.29   0.221    -.0098889    .0386142
-------------+----------------------------------------------------------------
     sigma_u |    .027731
     sigma_e |  .07435501
         rho |   .1221099   (fraction of variance due to u_i)
------------------------------------------------------------------------------


Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =    18614.72
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =      0.089
           Prob > F =      0.7708
```

-population to replace X3

Table A42: Light Manufacturing-Change in Employment 2

```
. xtreg y1 x1 x2 dlnpop, fe robust

Fixed-effects (within) regression               Number of obs      =       117
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.0211                         Obs per group: min =         9
       between = 0.0082                                        avg =       9.0
       overall = 0.0046                                        max =         9

                                                F(3,12)            =      1.18
corr(u_i, Xb)  = -0.4031                        Prob > F           =    0.3572

                                   (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
          y1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          x1 |  -2.846265   7.002979    -0.41   0.692    -18.10444    12.41192
          x2 |   23.07242   17.26133     1.34   0.206    -14.53679    60.68163
      dlnpop |  -4.373204   2.383085    -1.84   0.091    -9.565499    .8190919
       _cons |     .01444   .0111991     1.29   0.222    -.0099607    .0388407
-------------+----------------------------------------------------------------
     sigma_u |  .02772328
     sigma_e |  .07435409
         rho |  .12205282   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =    18400.14
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =      0.091
           Prob > F =      0.7687
```

Table A43: Heavy Manufacturing-Change in Employment 1

```
. xtreg y1 x1 x2 x3, fe robust

Fixed-effects (within) regression               Number of obs      =       117
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.0315                         Obs per group: min =         9
       between = 0.0071                                        avg =       9.0
       overall = 0.0244                                        max =         9

                                                F(3,12)            =      0.64
corr(u_i, Xb)  = -0.1499                        Prob > F           =    0.6041

                                    (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
          y1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          x1 |   -.156907   2.681787    -0.06   0.954    -6.000019    5.686205
          x2 |    26.8917   21.86134     1.23   0.242    -20.74006    74.52347
          x3 |  -2.670229    2.57361    -1.04   0.320    -8.277644    2.937186
       _cons |   .0093407   .0116087     0.80   0.437    -.0159525    .0346339
-------------+----------------------------------------------------------------
     sigma_u |  .01890769
     sigma_e |  .06059977
         rho |  .08871353   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =     1789.90
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =      2.037
           Prob > F =      0.1790
```

-population to replace X3

Table A44: Heavy Manufacturing-Change in Employment 2

```
. xtreg y1 x1 x2 dlnpop, fe robust

Fixed-effects (within) regression               Number of obs      =       117
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.0315                         Obs per group: min =         9
       between = 0.0072                                        avg =       9.0
       overall = 0.0245                                        max =         9

                                                F(3,12)            =      0.64
corr(u_i, Xb)  = -0.1487                        Prob > F           =    0.6050

                                    (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
          y1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          x1 |   2.511371   2.857931     0.88   0.397    -3.715527    8.738268
          x2 |   29.57119   22.92743     1.29   0.221    -20.38338    79.52576
      dlnpop |  -2.684163   2.595958    -1.03   0.322    -8.340269    2.971943
       _cons |   .0093601   .0116688     0.80   0.438     -.016064    .0347842
-------------+----------------------------------------------------------------
     sigma_u |  .01889535
     sigma_e |  .06060056
         rho |  .08860596   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =     1783.13
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =      2.036
           Prob > F =      0.1791
```

Table A45: Electricity, gas and water supply-Change in Employment 1

```
. xtreg y1 x1 x2 x3, fe robust

Fixed-effects (within) regression               Number of obs      =       117
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.0115                         Obs per group: min =         9
       between = 0.1557                                        avg =       9.0
       overall = 0.0267                                        max =         9

                                                F(3,12)            =      1.10
corr(u_i, Xb)  = -0.0320                        Prob > F           =    0.3857

                                  (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
          y1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          x1 |   4.876119   5.035444     0.97   0.352    -6.095172    15.84741
          x2 |   4.831504   22.11056     0.22   0.831    -43.34326    53.00627
          x3 |   3.212526   2.087078     1.54   0.150    -1.334825    7.759878
       _cons |  -.0229599   .0097086    -2.36   0.036    -.0441131   -.0018067
-------------+----------------------------------------------------------------
     sigma_u |  .02143709
     sigma_e |  .06981997
         rho |  .08614855   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =    11763.82
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =      1.877
           Prob > F =      0.1958
```

-population to replace X3

Table A46: Electricity, gas and water supply-Change in Employment 2

```
. xtreg y1 x1 x2 dlnpop, fe robust

Fixed-effects (within) regression               Number of obs      =       117
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.0115                         Obs per group: min =         9
       between = 0.1560                                        avg =       9.0
       overall = 0.0267                                        max =         9

                                                F(3,12)            =      1.10
corr(u_i, Xb)  = -0.0307                        Prob > F           =    0.3880

                                  (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
          y1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          x1 |   1.665826   5.007096     0.33   0.745    -9.243699    12.57535
          x2 |   1.607537   22.26182     0.07   0.944     -46.8968    50.11187
      dlnpop |   3.229865   2.105609     1.53   0.151    -1.357862    7.817593
       _cons |  -.0229859   .0097592    -2.36   0.036    -.0442495   -.0017223
-------------+----------------------------------------------------------------
     sigma_u |  .02143297
     sigma_e |  .06982084
         rho |  .08611631   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =    11767.38
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =      1.877
           Prob > F =      0.1958
```

Table A47: Construction-Change in Employment 1

```
. xtreg y1 x1 x2 x3, fe robust

Fixed-effects (within) regression               Number of obs      =       117
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.0164                         Obs per group: min =         9
       between = 0.1262                                        avg =       9.0
       overall = 0.0045                                        max =         9

                                                F(3,12)            =      3.47
corr(u_i, Xb)  = -0.3574                        Prob > F           =    0.0509

                                    (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
          y1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          x1 |  -22.35255   21.21779    -1.05   0.313    -68.58213    23.87703
          x2 |   78.19556   42.94908     1.82   0.094    -15.38246    171.7736
          x3 |   5.046003   6.318253     0.80   0.440    -8.720288    18.81229
       _cons |   .0112637   .0307797     0.37   0.721    -.0557995     .078327
-------------+----------------------------------------------------------------
     sigma_u |  .05216073
     sigma_e |  .22322164
         rho |  .05177568   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =    1.6e+05
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =      2.328
           Prob > F =      0.1530
```

-population to replace X3

Table A48: Construction-Change in Employment 2

```
. xtreg y1 x1 x2 dlnpop, fe robust

Fixed-effects (within) regression               Number of obs      =       117
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.0164                         Obs per group: min =         9
       between = 0.1278                                        avg =       9.0
       overall = 0.0045                                        max =         9

                                                F(3,12)            =      3.47
corr(u_i, Xb)  = -0.3561                        Prob > F           =    0.0509

                                    (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
          y1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          x1 |  -27.38829   17.76619    -1.54   0.149    -66.09749     11.3209
          x2 |   73.14934   46.82628     1.56   0.144    -28.87637     175.175
      dlnpop |   5.039588   6.373687     0.79   0.444    -8.847482    18.92666
       _cons |    .011381   .0309371     0.37   0.719    -.0560251    .0787872
-------------+----------------------------------------------------------------
     sigma_u |  .05211532
     sigma_e |  .22322581
         rho |  .05168839   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =    1.6e+05
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =      2.323
           Prob > F =      0.1534
```

Table A49: W/sale, Retail Trade; Hotels and Rest.-Change in Employment 1

```
. xtreg y1 x1 x2 x3, fe cluster(n)

Fixed-effects (within) regression               Number of obs      =       117
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.0525                         Obs per group: min =         9
       between = 0.0065                                        avg =       9.0
       overall = 0.0123                                        max =         9

                                                F(3,12)            =      1.46
corr(u_i, Xb)  = -0.5788                        Prob > F           =    0.2759

                                   (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
          y1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          x1 |  -61.15215   54.58952    -1.12   0.285    -180.0925     57.7882
          x2 |   121.2561   141.9327     0.85   0.410    -187.9887    430.5009
          x3 |  -69.42766   50.55852    -1.37   0.195    -179.5852    40.72989
       _cons |    .429306   .2427318     1.77   0.102    -.0995611    .9581731
-------------+----------------------------------------------------------------
     sigma_u |  .30208011
     sigma_e |  .66091658
         rho |  .17280585   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =    1.1e+06
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =     33.305
           Prob > F =      0.0001
```

-population to replace X3

Table A50: W/sale, Retail Trade; Hotels and Rest.-Change in Employment 2

```
. xtreg y1 x1 x2 dlnpop, fe cluster(n)

Fixed-effects (within) regression               Number of obs      =       117
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.0522                         Obs per group: min =         9
       between = 0.0061                                        avg =       9.0
       overall = 0.0124                                        max =         9

                                                F(3,12)            =      1.45
corr(u_i, Xb)  = -0.5764                        Prob > F           =    0.2783

                                   (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
          y1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          x1 |   8.196616   17.67514     0.46   0.651     -30.3142    46.70743
          x2 |   190.8505   129.1669     1.48   0.165    -90.58011     472.281
      dlnpop |   -69.6497   50.94174    -1.37   0.197    -180.6422    41.34282
       _cons |    .429151   .2436714     1.76   0.104    -.1017634    .9600655
-------------+----------------------------------------------------------------
     sigma_u |  .30100039
     sigma_e |  .66103332
         rho |  .17173432   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =    1.1e+06
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =     33.323
           Prob > F =      0.0001
```

Employment

Y= employment

Y2= immigration from EEC / total population

Y3= immigration from MPC / total population

Y4= native population / total population

Table A51: Mining and quarrying-Employment 1

```
. xtreg y y2 y3 y4, fe cluster(n)

Fixed-effects (within) regression               Number of obs      =       130
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.0272                         Obs per group: min =        10
       between = 0.0000                                        avg =      10.0
       overall = 0.0000                                        max =        10

                                                F(2,12)            =      1.14
corr(u_i, Xb)  = -0.0174                        Prob > F           =    0.3518

                                    (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          y2 |  (dropped)
          y3 |  -53.37374   50.98678    -1.05   0.316    -164.4644     57.7169
          y4 |  -2.619496   7.659365    -0.34   0.738    -19.30782    14.06883
       _cons |   12.24406   7.669525     1.60   0.136    -4.466398    28.95452
-------------+----------------------------------------------------------------
     sigma_u |  1.1891735
     sigma_e |  .09143632
         rho |  .99412258   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =     4143.41
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =     66.072
           Prob > F =      0.0000
```

-population to replace Y4

Table A52: Mining and quarrying-Employment 2

```
. xtreg y y2 y3 lnpop, fe cluster(n)

Fixed-effects (within) regression               Number of obs      =       130
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.0808                         Obs per group: min =        10
       between = 0.8860                                        avg =      10.0
       overall = 0.8799                                        max =        10

                                                F(3,12)            =      1.80
corr(u_i, Xb)  = -0.9877                        Prob > F           =    0.2002

                                    (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          y2 |   9.082087   7.619568     1.19   0.256    -7.519526     25.6837
          y3 |    -27.908   62.90886    -0.44   0.665    -164.9746    109.1586
       lnpop |  -1.419316   1.154379    -1.23   0.242    -3.934492     1.09586
       _cons |   33.34977   19.28766     1.73   0.109    -8.674436    75.37398
-------------+----------------------------------------------------------------
     sigma_u |  2.5866155
     sigma_e |  .08927053
         rho |  .99881031   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =     1422.47
Prob>chi2 =      0.0000
```

```
Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =     61.543
           Prob > F =      0.0000
```

Table A53: Food products, beverages and tobacco-Employment 1

```
. xtreg y y2 y3 y4, fe cluster(n)

Fixed-effects (within) regression               Number of obs      =       130
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.0459                         Obs per group: min =        10
       between = 0.0017                                        avg =      10.0
       overall = 0.0009                                        max =        10

                                                F(2,12)            =      1.51
corr(u_i, Xb)  = -0.0462                        Prob > F           =    0.2610

                                    (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          y2 |  (dropped)
          y3 |   35.04311   35.77766     0.98   0.347    -42.90972    112.9959
          y4 |  -.0622321    6.39897    -0.01   0.992    -14.00439    13.87993
       _cons |   11.69393    6.40355     1.83   0.093    -2.258206    25.64607
-------------+----------------------------------------------------------------
     sigma_u |  1.2906173
     sigma_e |  .05254397
         rho |  .99834525   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =      751.11
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =     10.166
           Prob > F =      0.0078
```

-population to replace Y4

Table A54: Food products, beverages and tobacco-Employment 2

```
. xtreg y y2 y3 lnpop, fe cluster(n)

Fixed-effects (within) regression               Number of obs      =       130
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.1707                         Obs per group: min =        10
       between = 0.3768                                        avg =      10.0
       overall = 0.3757                                        max =        10

                                                F(3,12)            =      4.43
corr(u_i, Xb)  = -0.8967                        Prob > F           =    0.0257

                                    (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          y2 |   5.782799   3.163023     1.83   0.092    -1.108837    12.67444
          y3 |   55.32822   33.09638     1.67   0.120    -16.78261     127.439
       lnpop |  -1.256344   .6127483    -2.05   0.063    -2.591408    .0787199
       _cons |   32.63267   10.23967     3.19   0.008     10.32236    54.94299
-------------+----------------------------------------------------------------
     sigma_u |  2.3014756
     sigma_e |  .04920333
         rho |  .99954315   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =      175.91
Prob>chi2 =      0.0000
Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =     11.580
           Prob > F =      0.0052
```

Table A55: Light Manufacturing-Employment 1

```
. xtreg y y2 y3 y4, fe cluster(n)

Fixed-effects (within) regression               Number of obs      =       130
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.0297                         Obs per group: min =        10
       between = 0.0005                                        avg =      10.0
       overall = 0.0001                                        max =        10

                                                F(2,12)            =      0.88
corr(u_i, Xb)  = -0.0344                        Prob > F           =    0.4401

                                    (Std. Err. adjusted for 13 clusters in n)
```

y	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
y2	(dropped)					
y3	66.92723	50.54803	1.32	0.210	-43.20747	177.0619
y4	9.647693	9.198491	1.05	0.315	-10.3941	29.68948
_cons	3.681615	9.204759	0.40	0.696	-16.37383	23.73706
sigma_u	1.0436492					
sigma_e	.0957923					
rho	.99164573	(fraction of variance due to u_i)				

```
Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =    5511.60
Prob>chi2 =      0.0000


Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =      6.378
           Prob > F =      0.0266
```

-population to replace Y4

Table A56: Light Manufacturing-Employment 2

```
. xtreg y y2 y3 lnpop, fe cluster(n)

Fixed-effects (within) regression               Number of obs      =       130
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.2080                         Obs per group: min =        10
       between = 0.9364                                        avg =      10.0
       overall = 0.9271                                        max =        10

                                                F(3,12)            =      2.53
corr(u_i, Xb)  = -0.9974                        Prob > F           =    0.1068

                                    (Std. Err. adjusted for 13 clusters in n)
```

y	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
y2	2.719082	4.381684	0.62	0.546	-6.827788	12.26595
y3	100.9967	46.40324	2.18	0.050	-.1073077	202.1007
lnpop	-2.715938	1.066738	-2.55	0.026	-5.040161	-.3917149
_cons	58.72877	17.83171	3.29	0.006	19.8768	97.58074
sigma_u	3.7695317					
sigma_e	.08691965					
rho	.99946859	(fraction of variance due to u_i)				

```
Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =   20649.15
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =      5.798
           Prob > F =      0.0330
```

Table A57: Heavy Manufacturing-Employment 1

```
. xtreg y y2 y3 y4, fe cluster(n)

Fixed-effects (within) regression               Number of obs      =       130
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.0530                         Obs per group: min =        10
       between = 0.0125                                        avg =      10.0
       overall = 0.0096                                        max =        10

                                                F(2,12)            =      1.79
corr(u_i, Xb)  = 0.0756                         Prob > F           =    0.2087

                                  (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          y2 |  (dropped)
          y3 |   61.38328     33.046     1.86   0.088    -10.61776    133.3843
          y4 |   7.803894   6.740877     1.16   0.270    -6.883215      22.491
       _cons |   5.121202   6.742348     0.76   0.462    -9.569112    19.81152
-------------+----------------------------------------------------------------
     sigma_u |  1.1271793
     sigma_e |  .06530569
         rho |   .9966545   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =     2163.51
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =     13.564
           Prob > F =      0.0031
```

-population to replace Y4

Table A58: Heavy Manufacturing-Employment 2

```
. xtreg y y2 y3 lnpop, fe cluster(n)

Fixed-effects (within) regression               Number of obs      =       130
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.1894                         Obs per group: min =        10
       between = 0.8411                                        avg =      10.0
       overall = 0.8373                                        max =        10

                                                F(3,12)            =      3.74
corr(u_i, Xb)  = -0.9862                        Prob > F           =    0.0416

                                  (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          y2 |  -.3414215   4.350725    -0.08   0.939    -9.820836    9.137993
          y3 |    79.9594   27.44146     2.91   0.013     20.16959    139.7492
       lnpop |  -1.638868   .7286853    -2.25   0.044    -3.226537   -.0511995
       _cons |   40.32033   12.18378     3.31   0.006     13.77415    66.86651
-------------+----------------------------------------------------------------
     sigma_u |  2.7336403
     sigma_e |  .06068477
         rho |  .99950744   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =      456.75
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =     13.096
           Prob > F =      0.0035
```

Table A59: Electricity, gas and water supply-Employment 1

```
. xtreg y y2 y3 y4 y5, fe cluster(n)

Fixed-effects (within) regression               Number of obs      =       130
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.2932                         Obs per group: min =        10
       between = 0.3980                                        avg =      10.0
       overall = 0.3921                                        max =        10

                                                F(3,12)            =      2.73
corr(u_i, Xb)  = -0.3329                        Prob > F           =    0.0903

                                   (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          y2 |  (dropped)
          y3 |   167.4189    134.804     1.24   0.238    -126.2938    461.1317
          y4 |  -14.78333   34.32633    -0.43   0.674    -89.57399    60.00732
          y5 |   1.037758   .3914173     2.65   0.021     .1849326    1.890582
       _cons |   13.09371   35.03086     0.37   0.715    -63.23199    89.41941
-------------+----------------------------------------------------------------
     sigma_u |  1.0201014
     sigma_e |  .23155369
         rho |  .95099988   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =    41722.91
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =     25.396
           Prob > F =      0.0003
```

-population to replace Y4

Table A60: Electricity, gas and water supply-Employment 2

```
. xtreg y y2 y3 lnpop y5, fe cluster(n)

Fixed-effects (within) regression               Number of obs      =       130
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.7159                         Obs per group: min =        10
       between = 0.1065                                        avg =      10.0
       overall = 0.1036                                        max =        10

                                                F(4,12)            =    324.03
corr(u_i, Xb)  = -0.9958                        Prob > F           =    0.0000

                                   (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          y2 |  -29.32887   10.99351    -2.67   0.020    -53.28167   -5.376074
          y3 |   5.519625   104.4741     0.05   0.959    -222.1098    233.1491
       lnpop |   13.10346   2.226795     5.88   0.000     8.251685    17.95523
          y5 |   .2081023   .2141403     0.97   0.350    -.2584693    .6746738
       _cons |  -214.0661   36.42509    -5.88   0.000    -293.4296   -134.7026
-------------+----------------------------------------------------------------
     sigma_u |  13.043973
     sigma_e |  .14744217
         rho |  .99987225   (fraction of variance due to u_i)
------------------------------------------------------------------------------

 Modified Wald test for groupwise heteroskedasticity
 in fixed effect regression model

 H0: sigma(i)^2 = sigma^2 for all i

 chi2 (13)  =    2832.38
 Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =     25.580
           Prob > F =      0.0003
```

Table A61: Construction-Employment 1

```
. xtreg y y2 y3 y4 y5, fe robust

Fixed-effects (within) regression               Number of obs      =       130
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.5451                         Obs per group: min =        10
       between = 0.1965                                        avg =      10.0
       overall = 0.2057                                        max =        10

                                                F(3,12)            =      7.02
corr(u_i, Xb)  = -0.5383                        Prob > F           =    0.0056

                                   (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          y2 |  (dropped)
          y3 |  -47.18967   65.83421    -0.72   0.487    -190.6301    96.25075
          y4 |   4.360879   10.79596     0.40   0.693    -19.1615     27.88326
          y5 |   .9673917   .3217963     3.01   0.011     .2662577    1.668526
       _cons |   -2.20785   9.087008    -0.24   0.812    -22.00674    17.59104
-------------+----------------------------------------------------------------
     sigma_u |  1.1208527
     sigma_e |  .17021871
         rho |  .97745683   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =    4288.57
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =      1.062
           Prob > F =      0.3231
```

-population to replace Y4

Table A62: Construction-Employment 2

```
. xtreg y y2 y3 lnpop y5, fe robust

Fixed-effects (within) regression               Number of obs      =       130
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.5669                         Obs per group: min =        10
       between = 0.7632                                        avg =      10.0
       overall = 0.7043                                        max =        10

                                                F(4,12)            =      9.63
corr(u_i, Xb)  = -0.9909                        Prob > F           =    0.0010

                                   (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          y2 |   3.919681   19.00681     0.21   0.840     -37.4926    45.33196
          y3 |    -16.589   33.02559    -0.50   0.625    -88.54559    55.36759
       lnpop |  -3.649449   5.122851    -0.71   0.490    -14.81118    7.512284
          y5 |   1.189026   .5922804     2.01   0.068    -.1014416    2.479495
       _cons |    61.0255   80.08325     0.76   0.461    -113.4609    235.5119
-------------+----------------------------------------------------------------
     sigma_u |  4.1685117
     sigma_e |  .16682626
         rho |  .99840091   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =    8134.55
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =      0.848
           Prob > F =      0.3752
```

Table A63: W/sale, Retail Trade; Hotels and Rest-Employment 1

```
. xtreg y y2 y3 y4 y5, fe robust

Fixed-effects (within) regression               Number of obs      =       130
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.3857                         Obs per group: min =        10
       between = 0.0766                                        avg =      10.0
       overall = 0.0897                                        max =        10

                                                F(3,12)            =     22.93
corr(u_i, Xb)  = -0.3298                        Prob > F           =    0.0000

                                  (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          y2 |  (dropped)
          y3 |   77.53143   81.46885     0.95   0.360    -99.97394    255.0368
          y4 |   14.88023   18.35249     0.81   0.433    -25.10642    54.86687
          y5 |   .5660977   .1333706     4.24   0.001     .2755081    .8566873
       _cons |  -8.416104   18.19901    -0.46   0.652    -48.06834    31.23613
-------------+----------------------------------------------------------------
     sigma_u |  1.0183462
     sigma_e |  .21391487
         rho |  .95773915   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =    65624.57
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =   1046.216
           Prob > F =      0.0000
```

-population to replace Y4

Table A64: W/sale, Retail Trade; Hotels and Rest-Employment 2

```
. xtreg y y2 y3 lnpop y5, fe robust

Fixed-effects (within) regression               Number of obs      =       130
Group variable: n                               Number of groups   =        13

R-sq:  within  = 0.4010                         Obs per group: min =        10
       between = 0.8342                                        avg =      10.0
       overall = 0.7562                                        max =        10

                                                F(4,12)            =     17.13
corr(u_i, Xb)  = -0.9909                        Prob > F           =    0.0001

                                  (Std. Err. adjusted for 13 clusters in n)
------------------------------------------------------------------------------
             |               Robust
           y |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          y2 |  -8.147728   16.05847    -0.51   0.621    -43.13613    26.84067
          y3 |   85.05002   55.94763     1.52   0.154     -36.8494    206.9494
       lnpop |  -2.750414   1.638235    -1.68   0.119    -6.319822    .8189943
          y5 |   .6594793   .1564379     4.22   0.001     .3186303    1.000328
       _cons |   51.43497   26.17944     1.96   0.073    -5.605128    108.4751
-------------+----------------------------------------------------------------
     sigma_u |  3.4565356
     sigma_e |  .21217494
         rho |  .99624619   (fraction of variance due to u_i)
------------------------------------------------------------------------------

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (13)  =     2.7e+06
Prob>chi2 =      0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      12) =    955.471
           Prob > F =      0.0000
```