Immigration, Enterprises, and Employment in the European Union

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(Very preliminary – please do not quote)

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Abstract

We study the effects of ethnic diversity, measured by the share of immigrants in the total population in the EU member countries, on the number of establishments and employment in the EU. We distinguish between different industries and between different groups of source (migrant-sending) countries; i.e., Eastern European Countries (EECs) and Mediterranean Countries (MPCs). We use a panel data that covers the period 1988-2010, and find that migration from MPCs to the EU has a positive impact on both the number of enterprises and employment, especially in light manufacturing industries. Also migration from MPCs to the EU positively affects employment in construction and heavy manufacturing industries. Similarly, migration from EECs to the EU positively affects employment, especially in food and beverages industries.

Keywords: Migration; Enterprises; Employment.

JEL Classification: J2; J61; R23.

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1 Introduction

Immigration is at the forefront of the European Union’s (EU) attention as it is believed it significantly affects economic outcomes for natives through various channels. In this paper, we study the effects of ethnic diversity, measured by the share of immigrants in the total population in the EU member countries, on industry-level employment, and on the variety of products that both natives and immigrants are provided with in these countries. In particular, we are interested in finding out about whether and how the composition of businesses in the EU changes with the influx of immigrants. For example, do we see a change at the product extensive margin, such that new products are made available in the market, especially to cater to immigrants’ demand for some ethnic/diversified goods, or at the product intensive margin such that the share of establishments providing more standardized products increase?

The empirical motivation of our paper is obvious as statistical evidence shows that the immigrant population in the EU is significantly large. At the end of the 1990s, 3.5 per cent of the EU’s population (18 million) was of immigrant origin; see Aubarell and Aragall (2005). 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). As is discussed in detail, in the following section, not only may immigrants 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.

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[1] or are likely to be employed in jobs below their educational qualifications. We shall note that 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. 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.[2]

In this study, we scrutinize mainly the demand-related impact of the influx of immigrants on the variety of consumption goods available in the host countries. Hence the retail industry, which involves activities that are related to selling goods and services directly to consumers, is given a special emphasis. According to the EU-27, 2008-data, published by Eurostat (2011b), the retail industry is a subgroup of the distributive trades sector, which involves mostly activities that are related to the purchase and resale of goods in the same condition. The distributive trades sector includes 6.1 million enterprises — nearly 30 per cent of the total number of enterprises in the EU non-financial business economy

[1] 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 2011a: 41).

— a large number of which is micro, small, or medium-sized enterprises, and provides employment for almost a quarter of the EU non-financial business economy workforce (32.8 million persons), so it is the largest sector in terms of the number of enterprises, and is almost as large as the manufacturing industry in terms of the number of persons employed. Moreover, the share of the retail industry in total distributive trades is the largest both in terms of the number of enterprises (60 per cent) and of persons employed (55 per cent); see Eurostat statistics, European Business (NACE divisions).

We can distinguish between different types of enterprises. In general, establishments that are affiliated with a large firm, which consists of several stores (e.g., chain stores), (i) have complex distribution and inventory control systems, (ii) benefit significantly from scale and scope economies, and (iii) tend to provide more standardized products and offer lower prices. Small, owner-operated/stand-alone stores, however, tend to offer more customized products, and charge higher prices; see Dinlersoz (2004) for details. A positive relationship between the number of small, owner-operated/stand-alone stores and the share of immigrant population, hence, can be associated with the change of the composition of businesses at the product extensive margin, and so with increased diversity of consumption choices. By the same token, if immigrants have higher price elasticities of demand, or if they tend to consume products offered by chain stores, we may well observe a shift of the composition of businesses in the opposite direction.

2 Review of the related literature

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, etc. Although the vast majority of research has mainly analyzed the United States (US) there is a growing and recent literature

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3Micro, small, or medium-sized enterprises (SMEs), which comprise 99.8 per cent of all active enterprises in the EU non-financial business economy are mainly concentrated in the distributive trades sector.

4The number of persons employed in the non-financial business economy is estimated at about 136.3 million, that is approximately 60 per cent of total employment in the EU.

5Manufacturing is the largest sector within the EU non-financial business economy, both in terms of the number of persons employed (33 million) and of value added.

6See Hanson (2009) for discussions of this literature.
studying different EU Member States. Much of this literature is indirectly related to our study as we particularly focus on the immigration-induced changes in product diversity. 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, small, or even medium-sized enterprises, 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 (EC 2006, EMN 2005, 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. Such costs tend to be significantly high, especially when economic,

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7 A survey of the main findings of such studies can be found in UNECE (2002), the United Nations Economic Commission for Europe.

8 According to the European Commission (EC) publication, EC (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).

9 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).

10 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).
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.

There is a sizeable literature on the relationship between immigration and trade. 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. 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. The idea here is simple. If immigrants have preferences for certain goods produced in their country-of-origin — which may not be available in the country that they immigrate — and if their demand for such goods is sufficiently large — which is likely to occur in countries where the share of immigrants in the total population is sufficiently large — then they may lead the host country to import such differentiated goods. By the same token, immigrants may have a comparative advantage in producing such goods, with which supply may increase. Though a similar effect may stem from any kind of frictions or preferences leading immigrants to increase labor supply in industries producing such differentiated goods.

In this paper, we also study such preference effects of immigrants, but with a different focus. In contrast to the trade literature mentioned above, we want to delineate how the composition of businesses are linked to the share of immigrants in the total population, which is, surprisingly, a far less studied question in the existing literature, and so with which we would like to contribute to the literature. Our paper is closely related to Mazzolari and Neumark (2011) studying 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 size 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,

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11See 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.

12This 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; see White (2007) for discussions of such preference effects.
and a greater number of chains/big-box retailers, which appears to be contradicting with the diversity-enhancing effect of immigration. Although they find a positive relationship between immigration and ethnic diversity in the restaurant sector, which — as they argue — also may stem from comparative advantage of immigrants in the production of ethnic food from their country-of-origin. To the contrary, 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.

Another strand of the literature, to which our paper is indirectly related, looks at how prices change with the influx of immigrants. Lach (2007) employs a store-level price data and shows that the unexpected arrival of a large number of immigrants from the former Soviet Union in Israel, in the 1990s, leads to large and significant reductions in prices. This result may well reflect the demand-side effect of immigration, that is, new consumers (immigrants) have high price elasticity and low search costs, especially vis-à-vis the native population. Given composition effects, we may see the arrival of consumers with different characteristics may offset the demand level changes stemming from the increase in the number of consumers. Bodvarsson et al. (2008) analyze the effects of immigration from Cuba to Miami, especially after the Mariel Boatlift of 1980, and find positive demand effects, that is, retail sales per capita increased with the influx of Cuban immigrants. Bodvarsson and Van den Berg’s (2009) study, which focuses on Hispanic immigration to Dawson County, Nebraska — a uniquely-segmented economy where immigrants work exclusively in an export sector (the meatpacking industry) but consume locally — suggests that immigration can boost local consumer demand. Similarly, Frattini (2008), focus-
ing on immigration inflows in the UK, between 1995 and 2006, shows that the price of low-value and everyday grocery goods increased in the same period.

Our study differs from the existing studies such that not only it considers the supply-side effects of immigration, but that it treats immigrants as potential consumers of differentiated goods. Also our study is not confined to a particular area in a country, or to a single country. We study the EU Member States, which is also a contribution to the literature that mainly focuses on the US. Moreover, we distinguish between different industries and between different groups of source (migrant-sending) countries; i.e., Eastern European Countries (EECs), and Mediterranean Countries (MPCs). By employing static estimation methods, our study suggests that migration from MPCs to the EU has a positive impact on both the number of enterprises and employment, especially in light manufacturing industries. Migration from MPCs to the EU positively affects employment in construction and heavy manufacturing industries. Similarly, migration from EECs to the EU positively affects employment, especially in food and beverages industries. In the following sections, we introduce our methodology and data, and present our results. The last section provides some concluding remarks.

3 Methodology

The number of establishments equations are of the reduced form, and are derived from Mazzolori and Neumark (2009). Its theoretical roots can be found in Ottaviano and Peri’s (2006, 2008) studies, which incorporate consumption variety effects into the study of the economic benefits of immigration. In particular, they employ a general equilibrium model for a small open economy where individuals are differentiated in terms of origin, home-born vs foreign-born, and consume two goods, a homogeneous tradable good and a differentiated, local, non-tradable good. Home-born and foreign-born individuals are assumed to be able to produce different varieties of the non-tradable good. In such a model, the non-tradable good can be thought of as a composite basket of local services whose supply particularly benefits from diversity.

We follow the same approach, and attempt to directly study the relationship between immigration and the composition of products available to consumers. In particular, We scrutinize the effects of immigration on product diversity by looking at the industry-level number of enterprises and industry-level employment. We use the following two equations
to estimate the impacts of immigration on the number of enterprises and on employment:

\[
\text{enter}_j = \alpha_0 + \alpha_1(\text{EEC/Pop}) + \alpha_2(\text{MPC/Pop}) + \alpha_3(\text{NAV/Pop}) + \alpha_4(\text{REN}) + \varepsilon, \\
\text{emp}_i = \beta_0 + \beta_1(\text{EEC/Pop}) + \beta_2(\text{MPC/Pop}) + \beta_3(\text{NAV/Pop}) + \varepsilon,
\]

where the variable \(\text{enter}_j\) and \(\text{emp}_i\) are the number of enterprises and employment in industry \(j\) and \(i\), respectively, and \(\text{EEC/Pop}, \text{MPC/Pop}\) and \(\text{NAV/Pop}\) are the share of immigrants from EECs and from MPCs, and the share of native population in total population, respectively, and \(\text{REN}\) is the total renumeration paid to employees. These equations are also estimated by using the changing rates of the variables.

We use a panel-based approach so as to deal with unobserved country-pair heterogeneity, because conventional cross-section estimation techniques fail to model such heterogeneity, and so may yield biased estimates; see Cheng and Wall (2005) and Carrre (2006) for details. Cross-section specifications also fail to properly account for possible omitted variables bias; see De Benedictis and Taglioni (2011) for discussions. The two commonly used panel estimation techniques are the fixed-effects (FE) and the random-effects (RE) estimation methods. The main difference between the two methods is that the FE method allows country-pair individual effects to be correlated with regressors, whereas the RE method assumes that individual effects are uncorrelated with all regressors. As the FE method transforms data into deviations from individual means, ignoring the between-groups variance, it cannot provide estimates for the coefficients of time-invariant regressors such as distance. Although this is a disadvantage, an FE estimator is unbiased and consistent in the presence of correlation between individual effects and regressors, whereas the RE estimator is not. The common practice to choose which model to use is to employ a Hausman specification test, as suggested by Hausman (1978). We follow this strategy such that we first employ both the FE and RE models when estimating the effects of immigration on product diversity, then we employ a Hausman test.

4 Data and Results

Our migration data covers the period 1988-2010, and provides information on the number of immigrants in the EU. We distinguish between immigrants in terms their country of birth. So we have immigrants whose home country either belongs to the group of MPCs or to that of EECs. Also we distinguish between immigrants in terms of gen-
der and age. That said, the migration variable used in the econometric estimation includes the total number of immigrants. We extract our data mainly from two data sources, http://ec.europa.eu/eurostat from which we collect our migration data, and the OECD's Structural and Demographic Business Statistics from which we collect the enterprises and employment data. We shall note that the latter data source provides information at a very detailed sectoral level, especially on turnover, value-added, production, operating surplus, employment, labor costs and investment. The breakdown by industrial sector, including services, is supplemented by a further breakdown into size classes. The database also includes business demography statistics, such as enterprise birth, death and survival rates, as well as the number of high-growth enterprises and gazelles, especially from 1995 onwards.

We look at the relationship between migration and product diversity, both in terms of employment and the number of enterprises. We consider seven industries: (1) mining and quarrying, (2) food products, beverages and tobacco, (3) light manufacturing, (4) heavy manufacturing, (5) electricity, gas and water supply, (6) construction, (7) wholesale and retail trade, hotels and restaurants. Dependent variables (employment and the number of enterprises) are specified first as levels, then as the rates of change, and independent variables are adjusted accordingly. The FE and the RE models are estimated, and then a Hausman specification test is performed. Therefore, eight models for each industry are estimated and, in total, 56 econometric estimations are carried out. We shall note that, in almost all cases, the RE models are rejected. So we mainly focus on the results of the FE models, although, in some cases, we present also the results of the RE models.

Table 1 summarizes our findings from the estimation of the industry-level number of enterprises. In Table 1, the signs, (+) and (−), mean positive significant and negative significant, respectively. As for the variables, \( Y_1 \) stands for the number of enterprises, and \( X_1, X_2, \) and \( X_3 \) stand for the share of immigrants from EECs and from MPCs, and the share of native population in total population, respectively. \( X_4 \) is the total renumeration paid to employees. The model is also re-estimated by substituting \( X_5 \), the total population including migrants, for \( X_3 \), and the results are included in the lower section of the table. As is given by Table 1, immigrants from MPCs have a positive impact on the number of enterprises, especially in light manufacturing industries. That said, immigrants from EECs have a negative impact on the number of enterprises, especially in electricity, gas and water supply industries. As for the impact of total renumeration paid to employees on the number of enterprises, our results from the model in which \( X_3 \) is considered suggest
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<tbody>
<tr>
<td>1 Mining and Quarrying</td>
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<td>Y1</td>
<td>X1</td>
<td>Y1</td>
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<tr>
<td>2 Food Products, Beverages and Tobacco</td>
<td>X1</td>
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<td>X1</td>
<td>Y1</td>
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<td>3 Light Manufacturing</td>
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<td>4 Heavy Manufacturing</td>
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<td>5 Electricity, Gas and Water Supply</td>
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<td>6 Construction</td>
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<td>7 W/sale, Retail Trade, Hotels and Restaurants</td>
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Table 1: Results – the number of enterprises
<table>
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<th>Industries</th>
<th>Fixed effect</th>
<th>Random effect</th>
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<tbody>
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<td></td>
<td>X10</td>
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<td>1 Mining and Quarrying</td>
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<td>2 Food Products, Beverages and Tobacco</td>
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<td>3 Light Manufacturing</td>
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<td>4 Heavy Manufacturing</td>
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<td>5 Electricity, Gas and Water Supply</td>
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<td>6 Construction</td>
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<td>7 W/sale, Retail Trade, Hotels and Restaurants</td>
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| Industries                                | Fixed effect | Random effect |
|                                           | X10 | X11 | X13 | X10 | X11 | X13 |
| 1 Mining and Quarrying                    | 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  | +  | +  |

Table 2: Results – employment
<table>
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<th>Random effect Variables</th>
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<td>2 Food Products, Beverages and Tobacco</td>
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<td>Y2</td>
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<tr>
<td>3 Light Manufacturing</td>
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<td>4 Heavy Manufacturing</td>
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<td>5 Electricity, Gas and Water Supply</td>
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<td>6 Construction</td>
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<td>7 Wholesale, Retail Trade, Hotels and Restaurants</td>
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Table 3: Results – the rates of change in employment
a positive relationship, especially in construction, wholesale and retail trade, hotels and restaurants, and electricity, gas and water supply industries. Also, in the model in which the total population including migrants is substituted for the share of native people in total population we find that the impact of the total population including migrants on the number of enterprises is negative in food products, beverages and tobacco industries, and is positive in electricity, gas and water supply industries.

We summarize our estimation results for the impact of immigration on industry-level employment in Table 2. As before, in Table 2, the signs, (+) and (−), refer to as positive significant and negative significant, respectively. As for the variables, Y3 stands for employment, and X10, X11, and X12 stand for the share of immigrants from EECs and from MPCs, and the share of native population in total population, respectively. We also re-estimate the model by substituting X13, the total population including migrants, for X12, and present the results in the lower section of the table. As is given by Table 2, immigrants from MPCs have a positive impact on employment in both light and heavy manufacturing industries. That said, immigrants from EECs have a positive impact on employment in food products, beverages and tobacco industries. Similarly, an increase in total population (including migrants) increases employment in wholesale and retail trade, hotels and restaurants, and decreases employment in light and heavy manufacturing industries, and in food products, beverages and tobacco industries.

Finally, we scrutinize how the rates of change in immigration affect industry-level employment, results of which are given by Table 3, where the signs, (+) and (−), refer to as positive significant and negative significant, respectively. The variable Y2, now, stands for the rate of change in employment, that is, employment \((t - (t - 1))/employment (t - 1)\). Similarly, the variables X6, X7, and X8 stand for the change in the share of immigrants from EECs and from MPCs, and the change in the share of native population in total population, respectively. We re-estimate the model by substituting X9, the change in the total population including migrants, for X8, and present the results in the lower section of the table. As is consistent with our previous results, in this case, our results suggest a negative relationship between the change in total population and the change in employment, especially in food products, beverages, and tobacco, and light manufacturing industries. Also we observe the same effects in the same industries even when we do not substitute the change in the total population for the change in the share of native population in total population. In this case, we observe a positive impact of immigrants from MPCs on employment, especially in the construction industry.
5 Concluding Remarks

Our estimation results have shown that immigration from Mediterranean countries has a positive impact on the number of enterprises in light manufacturing industries, and on employment in both light and heavy manufacturing industries. Immigration from Eastern European countries, however, decreases the number of enterprises, in electricity, gas and water supply industries, and increases employment in food products, beverages and tobacco industries. Our estimation results have also suggested a negative relationship between the change in the share of native population in total population and the change in employment, especially in food, beverages, and tobacco, and light manufacturing industries. Finally, our results have shown that an increase in the change in the share of immigrants from Mediterranean countries increases employment in construction industry which might be expected due to low skill levels of immigrants, or due to some other factors that we have already discussed in the introduction section (e.g., the non-recognition of immigrants’ qualifications and skills which are earned abroad).

References


APPENDIX: RESULTS

Changes in the number of enterprises

Y1 = # of enterprises (t - (t-1))/ enterprises (t - 1)
X1 = immigration from EECs (t - (t-1))/ total population (t - 1)
X2 = immigration from MPCs (t - (t-1))/ total population (t - 1)
X3 = native people (t- (t-1))/ total population (t - 1)
X4 = per labor renumeration

Table A1: Mining and quarrying (I)

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x x x x x, fe cluster(n)
Fixed-effects (within) regression Number of obs = 117
Group variable: m 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) = 6.913
corr(u_i, X) = -0.6561
                      Prob > F = 0.1564
```

(Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
F(4,12) = 2.01
Prob > F = 0.1564

Table A2: Mining and quarrying (II) - population to replace X3

```
x x x x x, dlnpop x x, fe cluster(n)
Fixed-effects (within) regression Number of obs = 117
Group variable: m Number of groups = 13
R-sq: within = 0.0268 Obs per group: min = 9
between = 0.1700 avg = 9.0
overall = 0.0001 max = 9
F(4,12) = 6.916
corr(u_i, X) = -0.6552
                      Prob > F = 0.1588
```

(Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
F(4,12) = 6.916
Prob > F = 0.0220
Table A3: Food products, beverages and tobacco (I)

```
x:reg y1 x1 x2 x3 x4, fe cluster(n)
Fixed-effects (within) regression
Number of obs = 117
Group variable: m
Number of groups = 13
R-sq: within = 0.1123
    obs per group: min = 9
    between = 0.0867
    max = 9
    overall = 0.0088
F(4,12) = 1.02
Corr(u_i, Xb) = -0.6946
(Std. Err. adjusted for 13 clusters in n)
```

|    | Robust  | Std. Err. | t     | P>|t|  | [95% Conf. Interval] |
|----|---------|-----------|-------|------|----------------------|
| y1 | 4.031438| 5.282094  | -0.75 | 0.465| -15.68439 to 7.623189|
| x1 | -7.759379| 9.092311  | -0.85 | 0.410| -27.56994 to 12.05108|
| x2 | -7.932472| 4.962996  | -1.60 | 0.136| -18.74583 to 11.88098|
| x3 | -25.99962| 70.89335  | -0.37 | 0.720| -188.45443 to 128.4724|
| cons| 0.037635| 0.023665  | 1.55  | 0.146| -0.018057 to 0.083327|

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model
H0: sigma(i)=2 = sigma2 for all i
chi2 [13] = 455.30
Prob>chi2 = 0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
F(4,12) = 8.767
Prob > F = 0.0434
(Std. Err. adjusted for 13 clusters in n)

Table A4: Food products, beverages and tobacco (II)- population to replace X3

```
x:reg y1 x1 x2 dlnpop x4, fe cluster(n)
Fixed-effects (within) regression
Number of obs = 117
Group variable: m
Number of groups = 13
R-sq: within = 0.1128
    obs per group: min = 9
    between = 0.0865
    max = 9
    overall = 0.0084
F(4,12) = 1.02
Corr(u_i, Xb) = -0.6936
(Std. Err. adjusted for 13 clusters in n)
```

|    | Robust  | Std. Err. | t     | P>|t|  | [95% Conf. Interval] |
|----|---------|-----------|-------|------|----------------------|
| y1 | 3.093652| 3.048     | 1.28  | 0.226| -2.747369 to 10.53467|
| x1 | 1.965573| 6.41446   | 0.03  | 0.976| -13.77599 to 14.73283|
| x2 | -7.966254| 5.006666  | -1.59 | 0.137| -18.87421 to 2.940146|
| dlnpop| -25.99496| 70.89298 | -0.37 | 0.720| -180.4575 to 128.4676|
| cons| 0.036786| 0.023765  | 1.55  | 0.148| -0.016377 to 0.088849|

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model
H0: sigma(i)=2 = sigma2 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
(Std. Err. adjusted for 13 clusters in n)
Table A5: Light Manufacturing (I)

.xtreg y1 x2 x3 x4, fe robust

Fixed-effects (within) regression

<table>
<thead>
<tr>
<th></th>
<th>Number of obs = 117</th>
<th>Number of groups = 13</th>
</tr>
</thead>
<tbody>
<tr>
<td>R-sq:</td>
<td>within = 0.0030</td>
<td>Obs per group: min = 9</td>
</tr>
<tr>
<td></td>
<td>between = 0.3542</td>
<td>avg = 9.0</td>
</tr>
<tr>
<td>overall</td>
<td>= 0.0041</td>
<td>max = 9</td>
</tr>
<tr>
<td></td>
<td>cor(u_i, Xb) = -0.7425</td>
<td></td>
</tr>
<tr>
<td>F(4,12)</td>
<td>= 2.13</td>
<td>Prob &gt; F = 0.1403</td>
</tr>
<tr>
<td></td>
<td>(Std. Err. adjusted for 13 clusters in n)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>y2</th>
<th>Robust</th>
<th></th>
<th>[95% Conf. Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coef.</td>
<td>Std. Err.</td>
<td>t</td>
</tr>
<tr>
<td>x1</td>
<td>-6.573976</td>
<td>6.08823</td>
<td>-1.08</td>
</tr>
<tr>
<td>x2</td>
<td>0.059589</td>
<td>18.65288</td>
<td>0.16</td>
</tr>
<tr>
<td>x3</td>
<td>-8.273735</td>
<td>5.902511</td>
<td>-1.43</td>
</tr>
<tr>
<td>x4</td>
<td>-6.181712</td>
<td>6.079129</td>
<td>-1.02</td>
</tr>
<tr>
<td>_cons</td>
<td>0.0425391</td>
<td>0.207283</td>
<td>1.54</td>
</tr>
<tr>
<td>sigma_u</td>
<td>0.00397577</td>
<td></td>
<td></td>
</tr>
<tr>
<td>sigma_e</td>
<td>0.000000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>rho</td>
<td>0.29897581</td>
<td>(fraction of variance due to u_i)</td>
<td></td>
</tr>
</tbody>
</table>

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model
H0: sigma(i)^2 = sigma^2 for all i
ch2(13) = 1492.10
Prob=ch2 = 0.0000

Table A6: Light Manufacturing (II) - population to replace X3

.xtreg y1 x2 x3 x4, dlnpop x4, fe robust

Fixed-effects (within) regression

<table>
<thead>
<tr>
<th></th>
<th>Number of obs = 117</th>
<th>Number of groups = 13</th>
</tr>
</thead>
<tbody>
<tr>
<td>R-sq:</td>
<td>within = 0.0025</td>
<td>Obs per group: min = 9</td>
</tr>
<tr>
<td></td>
<td>between = 0.3548</td>
<td>avg = 9.0</td>
</tr>
<tr>
<td>overall</td>
<td>= 0.0061</td>
<td>max = 9</td>
</tr>
<tr>
<td></td>
<td>cor(u_i, Xb) = -0.7416</td>
<td></td>
</tr>
<tr>
<td>F(4,12)</td>
<td>= 2.12</td>
<td>Prob &gt; F = 0.1405</td>
</tr>
<tr>
<td></td>
<td>(Std. Err. adjusted for 13 clusters in n)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>y2</th>
<th>Robust</th>
<th></th>
<th>[95% Conf. Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coef.</td>
<td>Std. Err.</td>
<td>t</td>
</tr>
<tr>
<td>x1</td>
<td>1.689695</td>
<td>2.022764</td>
<td>0.83</td>
</tr>
<tr>
<td>x2</td>
<td>11.34797</td>
<td>17.35261</td>
<td>0.65</td>
</tr>
<tr>
<td>dlnpop</td>
<td>-8.302548</td>
<td>5.946965</td>
<td>-1.42</td>
</tr>
<tr>
<td>x4</td>
<td>-6.18558</td>
<td>6.084441</td>
<td>-1.02</td>
</tr>
<tr>
<td>_cons</td>
<td>0.0425318</td>
<td>0.2077374</td>
<td>1.53</td>
</tr>
<tr>
<td>sigma_u</td>
<td>0.00396879</td>
<td></td>
<td></td>
</tr>
<tr>
<td>sigma_e</td>
<td>0.000000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>rho</td>
<td>0.2986237</td>
<td>(fraction of variance due to u_i)</td>
<td></td>
</tr>
</tbody>
</table>

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model
H0: sigma(i)^2 = sigma^2 for all i
ch2(13) = 1492.82
Prob=ch2 = 0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
F(1, 12) = 0.278
Prob > F = 0.1092
Table A7: Heavy Manufacturing (I)

```
xtrg y1 x1 x2 x3 x4, fe robust
```

<table>
<thead>
<tr>
<th>Fixed-effects (within) regression</th>
<th>Number of obs  =  117</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group variable: m</td>
<td>Number of groups      =  13</td>
</tr>
<tr>
<td>R-sq: within = 0.0661</td>
<td>Obs. per group: min =  9</td>
</tr>
<tr>
<td>between = 0.3752</td>
<td>avg = 9.0</td>
</tr>
<tr>
<td>overall = 0.0600</td>
<td>max = 9.0</td>
</tr>
<tr>
<td>corr(u_i, Xb) = -0.7605</td>
<td>F(4, 12) = 1.14</td>
</tr>
<tr>
<td>Prob &gt; F = 0.3823</td>
<td>(Std. Err. adjusted for 13 clusters in n)</td>
</tr>
</tbody>
</table>

| y1 | Robust | Coef. | Std. Err. | t | P>|t| | [95% Conf. Interval] |
|----|--------|-------|-----------|---|------|---------------------|
| x1 | -8.223834 | 9.063605 | -0.91 | 0.382 | -27.97173 | 11.52406 |
| x2 | -6.546493 | 16.15217 | -0.41 | 0.692 | -41.73946 | 28.64566 |
| x3 | -10.04569 | 8.334554 | -1.21 | 0.214 | -29.10846 | 7.232313 |
| x4 | 0.035625  | 17.56219 | 0.01 | 0.616 | -29.22891 | 47.30836 |
| _cons | 0.062485 | 0.089713 | 1.60 | 0.135 | .0224255 | 0.1473969 |

**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

**F(1, 12) = 2.122**

**Prob > F = 0.1730**

---

Table A8: Heavy Manufacturing (II) - population to replace X3

```
xtrg y1 x1 x2 dlnpop x4, fe robust
```

<table>
<thead>
<tr>
<th>Fixed-effects (within) regression</th>
<th>Number of obs  =  117</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group variable: m</td>
<td>Number of groups      =  13</td>
</tr>
<tr>
<td>R-sq: within = 0.0657</td>
<td>Obs. per group: min =  9</td>
</tr>
<tr>
<td>between = 0.3747</td>
<td>avg = 9.0</td>
</tr>
<tr>
<td>overall = 0.0600</td>
<td>max = 9.0</td>
</tr>
<tr>
<td>corr(u_i, Xb) = -0.7597</td>
<td>F(4, 12) = 1.14</td>
</tr>
<tr>
<td>Prob &gt; F = 0.3847</td>
<td>(Std. Err. adjusted for 13 clusters in n)</td>
</tr>
</tbody>
</table>

| y1 | Robust | Coef. | Std. Err. | t | P>|t| | [95% Conf. Interval] |
|----|--------|-------|-----------|---|------|---------------------|
| x1 | 2.709526 | 2.313085 | 1.17 | 0.264 | -2.330254 | 7.749036 |
| x2 | 4.426297 | 3.77891 | 1.22 | 0.754 | -25.59537 | 30.44796 |
| dlnpop | -10.98072 | 8.396392 | -1.31 | 0.215 | -29.27469 | 7.31251 |
| x4 | 9.019426 | 17.58479 | 0.51 | 0.617 | -29.9494 | 47.33339 |
| _cons | 0.062428 | 0.089175 | 1.60 | 0.136 | .0227669 | 0.147682 |

**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 A9: Electricity, gas and water supply (I)

```
xtdreg y1 x1 x2 x3 x4, fe robust
Fixed-effects (within) regression

<table>
<thead>
<tr>
<th></th>
<th>Number of obs = 117</th>
<th>Number of groups = 13</th>
</tr>
</thead>
<tbody>
<tr>
<td>R-sq: within</td>
<td>0.8218</td>
<td></td>
</tr>
<tr>
<td>between</td>
<td>0.7382</td>
<td>9.0</td>
</tr>
<tr>
<td>overall</td>
<td>0.0052</td>
<td>max = 9</td>
</tr>
<tr>
<td>corr(u_i, Xb)</td>
<td>-0.3756</td>
<td>F(4,12) = 1.66</td>
</tr>
<tr>
<td>Prob &gt; F</td>
<td>0.2227</td>
<td></td>
</tr>
</tbody>
</table>

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

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model

H0: `sigma(i)*2 = sigma*2` for all i

ch2 (13) = 20460.87
Prob>ch2 = 0.0000

Wooldridge test for autocorrelation in panel data

H0: no first-order autocorrelation

F(1, 12) = 4.379
Prob > F = 0.0583

### Table A10: Electricity, gas and water supply (II) - population to replace X3

```
xtdreg y1 x1 x2 dinpop x4, fe robust
Fixed-effects (within) regression

<table>
<thead>
<tr>
<th></th>
<th>Number of obs = 117</th>
<th>Number of groups = 13</th>
</tr>
</thead>
<tbody>
<tr>
<td>R-sq: within</td>
<td>0.8218</td>
<td></td>
</tr>
<tr>
<td>between</td>
<td>0.7382</td>
<td>9.0</td>
</tr>
<tr>
<td>overall</td>
<td>0.0052</td>
<td>max = 9</td>
</tr>
<tr>
<td>corr(u_i, Xb)</td>
<td>-0.3725</td>
<td>F(4,12) = 1.66</td>
</tr>
<tr>
<td>Prob &gt; F</td>
<td>0.2231</td>
<td></td>
</tr>
</tbody>
</table>

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

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model

H0: `sigma(i)*2 = sigma*2` for all i

ch2 (13) = 20495.09
Prob>ch2 = 0.0000

Wooldridge test for autocorrelation in panel data

H0: no first-order autocorrelation

F(1, 12) = 4.379
Prob > F = 0.0583

Modified Wooldridge test for groupwise heteroskedasticity in fixed effect regression model

H0: `sigma(i)*2 = sigma*2` for all i

ch2 (13) = 20460.87
Prob>ch2 = 0.0000

Wooldridge test for autocorrelation in panel data

H0: no first-order autocorrelation

F(1, 12) = 4.379
Prob > F = 0.0583

Modified Wooldridge test for groupwise heteroskedasticity in fixed effect regression model

H0: `sigma(i)*2 = sigma*2` for all i

ch2 (13) = 20495.09
Prob>ch2 = 0.0000

Wooldridge test for autocorrelation in panel data

H0: no first-order autocorrelation

F(1, 12) = 4.379
Prob > F = 0.0583
Table A11: Construction (I)

```
.xtreg y1 x1 x2 x3 x4, fe robust
Fixed-effects (within) regression
Number of obs = 117
Group variable: m  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

corr(u_i, Xb) = -0.4409
F(4,12) = 2.11
Prob > F = 0.1430
```

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

| y1  | Robust          | Coef. | Std. Err. | t   | P>|t| [95% Conf. Interval] |
|-----|-----------------|-------|-----------|-----|------------------------|
| x1  | -1.253513       | 88.42307 | -1.42 | 0.182 | -318.00086 | 67.30065 |
| x2  | 111.4848        | 82.70599 | 1.35  | 0.263 | -68.71431 | 291.6437 |
| x3  | -9.498247       | 20.37669 | -0.47 | 0.649 | -53.88226 | 34.88556 |
| x4  | 505.4124        | 530.5841 | 0.95  | 0.360 | -658.631 | 1661.456 |
| cons| 0.116163        | 0.0681508 | 1.71  | 0.113 | -9.318715 | 2.651842 |

Sigma u = .31576407
Sigma e = .87968284
rho = .11412306 (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) = 5.00e+06
Prob>chi2 = 0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
F(1, 12) = 0.454
Prob > F = 0.4374

Table A12: Construction (II) - population to replace X3

```
.xtreg y1 x1 x2 dnpop x4, fe robust
Fixed-effects (within) regression
Number of obs = 117
Group variable: m  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

corr(u_i, Xb) = -0.4409
F(4,12) = 2.11
Prob > F = 0.1430
```

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

| y1  | Robust          | Coef. | Std. Err. | t   | P>|t| [95% Conf. Interval] |
|-----|-----------------|-------|-----------|-----|------------------------|
| x1  | -115.8434       | 69.95987 | -1.66 | 0.124 | -268.2728 | 36.58608 |
| x2  | 121.0492        | 97.83571 | 1.24  | 0.240 | -92.1322 | 334.2325 |
| dnpop| -9.331268       | 20.35267 | -0.47 | 0.644 | -54.41366 | 35.14915 |
| x4  | 505.5811        | 530.6386 | 0.95  | 0.360 | -650.5812 | 1661.743 |
| cons| -0.13706        | 0.0608185 | 1.71  | 0.114 | -0.32447 | 0.066069 |

Sigma u = .3157346
Sigma e = .87959854
rho = .11414397 (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) = 5.00e+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 A13: W/sale, Retail Trade; Hotels and Rest. (I)

| y1  | Robust Coef. | Std. Err. | t | P>|t| | [95% Conf. Interval] |
|-----|--------------|-----------|---|------|---------------------|
| x1  | -0.20535     | 55.95004  | -1.42 | 0.152 | -2.48177 | 42.63933 |
| x2  | 0.04556      | 0.48      | 0.643 | -3.30 | 2.16679 | 35.75718 |
| x3  | 0.03746      | 10.4077   | -1.55 | 0.147 | -1.85747 | 31.49781 |
| x4  | 1.490758     | 163.7172  | 0.794 | 0.384 | -1.26633 | 504.785  |
| _cons | 0.437367   | 2.184764  | 2.00  | 0.068 | -0.0386522 | 0.9133682 |

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model
H0: sigma(i)^2 = sigma^2 for all i
chi2 (13) = 33905.07
Prob>chi2 = 0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
F(1,12) = 2.987
Prob > F = 0.3887

### Table A14: W/sale, Retail Trade; Hotels and Rest. (II) - population to replace X3

| y1  | Robust Coef. | Std. Err. | t | P>|t| | [95% Conf. Interval] |
|-----|--------------|-----------|---|------|---------------------|
| x1  | -2.176243    | 17.20201  | -0.13 | 0.902 | -39.8523 | 35.49982 |
| x2  | 0.04556      | 0.48      | 0.643 | -3.30 | 2.16679 | 35.75718 |
| dlnpop | 0.474664 | 10.4077   | 1.54 | 0.149 | -1.85747 | 31.49781 |
| x4  | 0.191518     | 163.9207  | 0.99  | 0.384 | -1.26633 | 504.785  |
| _cons | 0.4372917 | 2.194712  | 2.00  | 0.068 | -0.0386522 | 0.9133682 |

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model
H0: sigma(i)^2 = sigma^2 for all i
chi2 (13) = 33905.07
Prob>chi2 = 0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
F(1,12) = 2.987
Prob > F = 0.3887
The number of enterprises
Y = # of enterprises
Y2 = the share of immigrants from EECs in the total population
Y3 = the share of immigrants from MPCs in the total population
Y4 = the share of natives in the total population
Y5 = remuneration paid to employees

Table A15: Mining and quarrying (I)

```
.xtreg y x3 y4 y5, fe robust
Fixed-effects (within) regression
Number of obs = 130
Group variable: m  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

corr(x, Xb) = -0.5479
(Std. Err. adjusted for 13 clusters in n)
```

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model
H0: sigma(i)² = sigma² for all i

```
ch12 (13) = 25679.48
Prob > ch12 = 0.0000
```

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
F(1, 12) = 0.386
Prob > F = 0.5482

Table A16: Mining and quarrying (II) - population to replace Y4

```
.xtreg y x3 lnpop y5, fe robust
Fixed-effects (within) regression
Number of obs = 130
Group variable: m  Number of groups = 13
R-sq: within = 0.0800  Obs per group: min = 10
between = 0.5382  avg = 10.0
overall = 0.5311  max = 10

corr(x, Xb) = -0.4292
(Std. Err. adjusted for 13 clusters in n)
```

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model
H0: sigma(i)² = sigma² for all i

```
ch12 (13) = 1.20e+05
Prob > ch12 = 0.0000
```

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
F(1, 12) = 0.386
Prob > F = 0.5482
Table A17: Food products, beverages and tobacco (I)

```
xtregh 2 y3 y4 y5, fe cluster(n)
Fixed-effects (within) regression Number of obs = 130
Group variable: m Number of groups = 13
R-sq: within = 0.0057 Obs per group: min = 10
between = 0.0260 avg = 10.0
overall = 0.0197 max = 10
corr(u_i, Xb) = 0.1155
F(3,12) = 0.13
Prob > F = 0.9433
(Std. Err. adjusted for 13 clusters in n)
```

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

<table>
<thead>
<tr>
<th>y</th>
<th>Robust Coef. Std. Err. t  [95% Conf. Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td>y2</td>
<td>(dropped)</td>
</tr>
<tr>
<td>y3</td>
<td>14.96854 30.24585 0.49 0.630 -50.92149 80.86058</td>
</tr>
<tr>
<td>y4</td>
<td>1.773397 7.772036 0.23 0.823 -15.15985 18.70777</td>
</tr>
<tr>
<td>y5</td>
<td>0.283795 1.079819 0.17 0.869 -0.287866 0.955353</td>
</tr>
<tr>
<td>cons</td>
<td>0.960636 0.378446 0.83 0.422 -11.29338 25.21383</td>
</tr>
<tr>
<td>sigma_u</td>
<td>1.263439</td>
</tr>
<tr>
<td>sigma_e</td>
<td>0.0623051</td>
</tr>
<tr>
<td>rho</td>
<td>0.9753905 (fraction of variance due to u_i)</td>
</tr>
</tbody>
</table>

Wooldridge test for autocorrelation in panel data
F(1, 12) = 116.156
Prob > F = 0.0000

Table A18: Food products, beverages and tobacco (II) - population to replace Y4

```
xtregh 2 y3 lnpop y5, fe cluster(n)
Fixed-effects (within) regression Number of obs = 130
Group variable: m 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
corr(u_i, Xb) = -0.9233
F(4,12) = 3.37
Prob > F = 0.0457
(Std. Err. adjusted for 13 clusters in n)
```

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

<table>
<thead>
<tr>
<th>y</th>
<th>Robust Coef. Std. Err. t  [95% Conf. Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td>y2</td>
<td>0.524356 5.921495 0.16 0.875 -11.94641 13.85425</td>
</tr>
<tr>
<td>lnpop</td>
<td>36.12232 24.29297 1.49 0.163 -16.8975 89.05215</td>
</tr>
<tr>
<td>y3</td>
<td>-1.924329 0.654344 -2.94 0.012 -3.352398 -0.4962599</td>
</tr>
<tr>
<td>y5</td>
<td>0.597026 0.1794604 1.45 0.173 -1.301773 2.395824</td>
</tr>
<tr>
<td>cons</td>
<td>30.91689 10.77939 3.61 0.904 15.4063 62.46114</td>
</tr>
<tr>
<td>sigma_u</td>
<td>2.7706297</td>
</tr>
<tr>
<td>sigma_e</td>
<td>0.55892727</td>
</tr>
<tr>
<td>rho</td>
<td>0.99954781 (fraction of variance due to u_i)</td>
</tr>
</tbody>
</table>

Wooldridge test for autocorrelation in panel data
F(1, 12) = 74.833
Prob > F = 0.0000
Table A19: Light Manufacturing (I)

. xtreg y x2 x3 x4 x5, fe cluster(n)

Fixed-effects (within) regression  Number of obs = 130
Group variable: m  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

corr(u_i, Xb) = 0.3081

<table>
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<td>Std. Err.</td>
<td>t</td>
</tr>
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<td>-------------------</td>
<td>--------</td>
<td>-----------</td>
<td>-------</td>
</tr>
<tr>
<td></td>
<td>y2</td>
<td>(dropped)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>y3</td>
<td>5.7337</td>
<td>25.4493</td>
<td>2.66</td>
<td>0.021</td>
</tr>
<tr>
<td>y4</td>
<td>8.074565</td>
<td>7.744295</td>
<td>1.04</td>
<td>0.318</td>
</tr>
<tr>
<td>y5</td>
<td>0.0576428</td>
<td>0.110632</td>
<td>0.50</td>
<td>0.625</td>
</tr>
<tr>
<td>x_cons</td>
<td>2.07946</td>
<td>0.174465</td>
<td>0.25</td>
<td>0.804</td>
</tr>
</tbody>
</table>

sigma_u = 1.0092067
sigma_e = 0.6645617
rho   = 0.99552405 (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) = 1764.71
Prob>chi2 = 0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
F(1, 12) = 16.048
Prob > F = 0.0015

Table A20: Light Manufacturing (II) - population to replace Y4

. xtreg y x2 x3 lnpop x5, fe cluster(n)

Fixed-effects (within) regression  Number of obs = 130
Group variable: m  Number of groups = 13
R-sq: within = 0.0882  Obs per group: min = 10
          between = 0.7937  avg = 10.0
         overall = 0.6996  max = 10

corr(u_i, Xb) = 0.7180

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<td>Coef.</td>
<td>Std. Err.</td>
<td>t</td>
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<td>-------------------</td>
<td>--------</td>
<td>-----------</td>
<td>-------</td>
</tr>
<tr>
<td></td>
<td>y2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>y3</td>
<td>56.87239</td>
<td>24.16504</td>
<td>2.35</td>
<td>0.036</td>
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<tr>
<td>lnpop</td>
<td>.2363639</td>
<td>.0734434</td>
<td>0.26</td>
<td>0.799</td>
</tr>
<tr>
<td>y5</td>
<td>.0480162</td>
<td>.0134673</td>
<td>0.36</td>
<td>0.728</td>
</tr>
<tr>
<td>x_cons</td>
<td>6.299223</td>
<td>14.39853</td>
<td>0.44</td>
<td>0.667</td>
</tr>
</tbody>
</table>

sigma_u = 0.8169045
sigma_e = 0.9975737
rho   = 0.99357269 (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) = 16.008
Prob > F = 0.0014
Table A21: Heavy Manufacturing (I)

```
xreg y2 y3 y4 y5, fe cluster(n)
 Fixed-effects (within) regression
 Number of obs = 130
 Group variable: m Number of groups = 13
 R-sq: within = 0.1857 Obs per group: min = 10
 between = 0.1674 avg = 10.0
 overall = 0.1660 max = 10
 corr(u_i, Xb) = 0.0615
```

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

<table>
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<th></th>
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<td>Std. Err.</td>
<td>t</td>
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<tr>
<td>y2</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>y3</td>
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</tr>
<tr>
<td>y5</td>
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<td></td>
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<tr>
<td>_cons</td>
<td>1.095298</td>
<td>6.60151</td>
<td>0.16</td>
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<tr>
<td>sigma_u</td>
<td>.8908719</td>
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<tr>
<td>sigma_e</td>
<td>.0042153</td>
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<tr>
<td>rho</td>
<td>.9922151</td>
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</table>

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model:
H0: sigmait^2 = sigmat^2 for all i

chi2 (12) = 5594.64
Prob>chi2 = 0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
F(3, 12) = 2.99
Prob > F = 0.0734

Table A22: Heavy Manufacturing (II) - population to replace Y4

```
xreg y2 y3 ln(pop) y5, fe cluster(n)
 Fixed-effects (within) regression
 Number of obs = 130
 Group variable: m Number of groups = 13
 R-sq: within = 0.1309 Obs per group: min = 10
 between = 0.0846 avg = 10.0
 overall = 0.0430 max = 10
 corr(u_i, Xb) = -0.6613
```

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

<table>
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<tr>
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<th></th>
<th></th>
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<td>Std. Err.</td>
<td>t</td>
</tr>
<tr>
<td>y2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>y3</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>ln(pop)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>y5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>_cons</td>
<td>-10.6462</td>
<td>23.41518</td>
<td>-0.43</td>
</tr>
<tr>
<td>sigma_u</td>
<td>.596605</td>
<td></td>
<td></td>
</tr>
<tr>
<td>sigma_e</td>
<td>.0039402</td>
<td></td>
<td></td>
</tr>
<tr>
<td>rho</td>
<td>.97391903</td>
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</tr>
</tbody>
</table>

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model:
H0: sigmait^2 = sigmat^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 A23: Electricity, gas and water supply (I)

```
. xtreg y2 y3 y4 y5, fe cluster(n)
Fixed-effects (within) regression
Number of obs = 130
Group variable: m
Number of groups = 13
R-sq: within = 0.2932
between = 0.3980
overall = 0.3921
Obs per group: min = 10
avg = 10.0
max = 10
corr(u_i, Xb) = -0.3329
(Std. Err. adjusted for 13 clusters in n)

<table>
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<td></td>
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</tr>
<tr>
<td>y2</td>
<td>(dropped)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>y3</td>
<td>167.4189</td>
<td>134.884</td>
<td>1.24</td>
<td>0.238</td>
</tr>
<tr>
<td>y4</td>
<td>14.78333</td>
<td>34.32633</td>
<td>-0.43</td>
<td>0.674</td>
</tr>
<tr>
<td>y5</td>
<td>1.037758</td>
<td>0.3914173</td>
<td>2.65</td>
<td>0.021</td>
</tr>
<tr>
<td>_cons</td>
<td>13.09371</td>
<td>35.05386</td>
<td>0.37</td>
<td>0.715</td>
</tr>
</tbody>
</table>

`sigma_u ` 1.0201014  
`sigma_e ` .23155369  
`r`ho .95999888 (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

H0: chi2 (13) = 1077.35  
Prob = 0.0000

Wooldridge test for autocorrelation in panel data

H0: no first-order autocorrelation
F(1, 12) = 18.549  
Prob > F = 0.0010

### Table A24: Electricity, gas and water supply (II) - population to replace Y4

```
. xtreg y2 y3 lnpop y5, fe cluster(n)
Fixed-effects (within) regression
Number of obs = 130
Group variable: m
Number of groups = 13
R-sq: within = 0.7159
between = 0.1065
overall = 0.1036
Obs per group: min = 10
avg = 10.0
max = 10
corr(u_i, Xb) = -0.9958
(Std. Err. adjusted for 13 clusters in n)

<table>
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<tr>
<td></td>
<td>y</td>
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</tr>
<tr>
<td>y2</td>
<td>-29.32887</td>
<td>10.99351</td>
<td>-2.67</td>
<td>0.020</td>
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<tr>
<td>y3</td>
<td>5.519625</td>
<td>104.4741</td>
<td>0.05</td>
<td>0.959</td>
</tr>
<tr>
<td>lnpop</td>
<td>13.10346</td>
<td>2.29795</td>
<td>5.88</td>
<td>0.000</td>
</tr>
<tr>
<td>y5</td>
<td>0.201423</td>
<td>0.214403</td>
<td>0.97</td>
<td>0.350</td>
</tr>
<tr>
<td>_cons</td>
<td>214.0661</td>
<td>36.42569</td>
<td>-5.88</td>
<td>0.000</td>
</tr>
</tbody>
</table>

`sigma_u ` 13.043973  
`sigma_e ` .14744217  
`r`ho .99807225 (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

H0: chi2 (13) = 47214.16  
Prob = 0.0000

Wooldridge test for autocorrelation in panel data

H0: no first-order autocorrelation
F(1, 12) = 169.88  
Prob > F = 0.0001
Table A25: Construction (I)

\[
\begin{array}{cccc}
\text{rho} & -0.5383 & F(3,12) & 7.02 \\
\text{corr}(u_i, Xb) & & \text{Prob} > F & 0.0056
\end{array}
\]

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

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model

H0: \( \text{sigma}(i)^2 = \text{sigma}^2 \) for all i

\( \text{chi}^2(13) = 2459.00 \)

\( \text{Prob} = 0.0000 \)

Wooldridge test for autocorrelation in panel data

H0: no first-order autocorrelation

\( F(1, 12) = 1.985 \)

\( \text{Prob} > F = 0.1842 \)

Table A26: Construction (II) - population to replace Y4

\[
\begin{array}{cccc}
\text{rho} & \text{lnpop} & \text{y} & \text{y} \\
-0.9909 & & & 3.910861
\end{array}
\]

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

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model

H0: \( \text{sigma}(i)^2 = \text{sigma}^2 \) for all i

\( \text{chi}^2(13) = 23714.64 \)

\( \text{Prob} = 0.0000 \)

Wooldridge test for autocorrelation in panel data

H0: no first-order autocorrelation

\( F(1, 12) = 2.184 \)

\( \text{Prob} > F = 0.1643 \)
Table A27: W/sale, Retail Trade; Hotels and Rest. (I)

. xtreg y2 y3 y4 y5, fe robust

Fixed-effects (within) regression
Number of obs = 130
Group variable: m
Number of groups = 13
R-sq: within = 0.3857
between = 0.0766
overall = 0.0897
Obs per group: min = 10
avg = 10.0
max = 10

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

(Std. Err. adjusted for 13 clusters in m)

<table>
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<tr>
<th>y</th>
<th>Robust Coef.</th>
<th>Std. Err.</th>
<th>t</th>
<th>95% Conf. Interval</th>
</tr>
</thead>
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<td>y2</td>
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<td></td>
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</tr>
<tr>
<td>y3</td>
<td>77.53143</td>
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<tr>
<td>y4</td>
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<td>0.81</td>
<td>-25.19642 54.86687</td>
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<tr>
<td>y5</td>
<td>.5668977</td>
<td>.1333704</td>
<td>4.24</td>
<td>0.061 .2755801 .8566873</td>
</tr>
<tr>
<td></td>
<td>-8.416104</td>
<td>18.19901</td>
<td>-0.46</td>
<td>-48.06834 31.23613</td>
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sigma_u = 1.0183462
sigma_e = .21391487
rho_w = .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 first-order autocorrelation in panel data
F(3,12) = 1.819
Prob > F = 0.2924

Table A28: W/sale, Retail Trade; Hotels and Rest. (II) - population to replace Y4

. xtreg y2 y3 lnpop y5, fe robust

Fixed-effects (within) regression
Number of obs = 130
Group variable: m
Number of groups = 13
R-sq: within = 0.4010
between = 0.08342
overall = 0.07562
Obs per group: min = 10
avg = 10.0
max = 10

corr(u_i, Xb) = -0.9999
F(4,12) = 17.13
Prob > F = 0.0001

(Std. Err. adjusted for 13 clusters in m)

<table>
<thead>
<tr>
<th>y</th>
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<th>Std. Err.</th>
<th>t</th>
<th>95% Conf. Interval</th>
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<td>-8.147728</td>
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<td>-0.51</td>
<td>-43.13613 26.84067</td>
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<td>-1.68</td>
<td>-6.318822 .818943</td>
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<tr>
<td>y5</td>
<td>.6594793</td>
<td>.1564379</td>
<td>4.22</td>
<td>0.061 .318638 1.005328</td>
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<tr>
<td></td>
<td>51.43697</td>
<td>26.17944</td>
<td>1.96</td>
<td>0.073 .5.605128 108.4751</td>
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</table>

sigma_u = 3.4565356
sigma_e = .21217494
rho_w = .999624619 (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) = 12040.45
Prob>chi2 = 0.0000

Wooldridge test for first-order autocorrelation in panel data
F(4,12) = 1.721
Prob > F = 0.2141
Changes in employment

Y1 = employment (t - (t-1))/ employment (t - 1)
X1 = immigrants from EECs (t - (t-1)) / total population (t - 1)
X2 = immigrants from MPCs (t - (t-1))/ total population (t - 1)
X3 = native people (t- (t-1))/ total population (t - 1)

Table A29: Mining and quarrying (I)

. xtreg y1 x1 x2 x3, fe robust
Fixed-effects (within) regression
Number of obs = 117
Number of groups = 13
R-sq: within = 0.0047
between = 0.0330
overall = 0.0082
Obs per group: min = 9
avg = 9.0
max = 9
F(3, 12) = 0.258
corr(u_i, Xb) = -0.3223
Prob > F = 0.6872

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

| y1   | Robust Coef. | Std. Err. | t     | P>|t|  | 95% Conf. Interval |
|------|--------------|-----------|-------|------|------------------|
| x1   | 2.828564     | 0.98      | 2.85  | 0.00 | 1.818039 - 3.838146 |
| x2   | -12.45903    | 12.1679   | -1.02 | 0.31 | -34.82155 - 10.103816 |
| x3   | 2.131686     | 0.89      | 2.38  | 0.02 | 0.391 - 3.874972   |
| cons | -0.0185745   | 0.013436  | -1.39 | 0.17 | -.0432902 - 0.003092 |

sigma_u = 0.0213763
sigma_e = 0.00437394
rho = 0.003161 (fraction of variance due to u_i)

F(3, 12) = 0.50
Prob > F = 0.6207

Table A30: Mining and quarrying (II) - population to replace X3

. xtreg y1 x1 x2 dlnpop, fe robust
Fixed-effects (within) regression
Number of obs = 117
Number of groups = 13
R-sq: within = 0.0047
between = 0.0330
overall = 0.0082
Obs per group: min = 9
avg = 9.0
max = 9
F(3, 12) = 0.258
corr(u_i, Xb) = -0.3234
Prob > F = 0.6858

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

| y1   | Robust Coef. | Std. Err. | t     | P>|t|  | 95% Conf. Interval |
|------|--------------|-----------|-------|------|------------------|
| x1   | 0.957452     | 0.35      | 2.71  | 0.01 | 0.280632 - 1.63427 |
| x2   | -12.45903    | 12.1679   | -1.02 | 0.31 | -34.82155 - 10.103816 |
| dlnpop | 2.131686     | 0.89      | 2.38  | 0.02 | 0.391 - 3.874972   |
| cons | -0.0185745   | 0.013436  | -1.39 | 0.17 | -.0432902 - 0.003092 |

sigma_u = 0.02138914
sigma_e = 0.00437272
rho = 0.0031644 (fraction of variance due to u_i)

F(3, 12) = 0.50
Prob > F = 0.6207

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model
H0: sigma(i)^2 = sigma^2 for all i
chi2 (12) = 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 = 0.6206
Table A31: Food products, beverages and tobacco (I)

```
.xtreg y1 x1 x2 x3, fe cluster(n)
Fixed-effects (within) regression
  Number of obs =  117
  Number of groups =  13
R-sq:  within =  0.0863  Obs per group:  min =  9
  between =  0.0862  avg =  9.0
  overall =  0.0007  max =  9
F(3,12) =  5.412  Prob > F =  0.2553
(Std. Err. adjusted for 13 clusters in n)
                   Robust
    y1          Coef.  Std. Err.     t     [95% Conf. Interval]
    x1       -1.517677    2.958406   -0.51    0.617   -7.96349    4.928136
    x2       -1.261237   11.34956   -0.11    0.915   -25.98951   23.46734
    x3       -1.539014   0.021206   -1.87    0.085   -3.328431   0.2504024
    _cons      0.002266    0.003743   0.66    0.560   -0.009793    0.018313
sigma_u     0.01426154
sigma_e    0.04075326
rho        -0.1665427  (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

Woolridge test for autocorrelation in panel data

H0: no first-order autocorrelation

   F(3,12) =  5.408  Prob > F =  0.2562

Table A32: Food products, beverages and tobacco (II) - population to replace X3

```
.xtreg y1 x1 x2 dlnpop, fe cluster(n)
Fixed-effects (within) regression
  Number of obs =  117
  Number of groups =  13
R-sq:  within =  0.0863  Obs per group:  min =  9
  between =  0.0860  avg =  9.0
  overall =  0.0007  max =  9
F(3,12) =  5.4709  Prob > F =  0.2562
(Std. Err. adjusted for 13 clusters in n)
                   Robust
    y1          Coef.  Std. Err.     t     [95% Conf. Interval]
    x1        0.206653    2.801857   0.01    0.994   -6.084057    6.125388
    x2        0.284025    1.725099   0.17    0.981   -25.708938   25.305295
    dlnpop    -1.5453    0.273909   -1.87    0.086   -3.315595   -0.759329
    _cons     -0.022376    0.003798   0.66    0.558   -0.059872    0.014219
sigma_u     0.01448657
sigma_e    0.04087326
rho        -0.15989233  (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

Woolridge test for autocorrelation in panel data

H0: no first-order autocorrelation

   F(3,12) =  5.412  Prob > F =  0.2383
Table A33: Light Manufacturing (I)

```
.xtreg y1 x1 x2 x3, fe robust
Fixed-effects (within) regression                      Number of obs =  117
Group variable: m                                      Number of groups =  13
R-sq: within = 0.8210  Obs per group: min =  9
            between = 0.0882  avg =  9.0
            overall = 0.0046  max =  9
            corr(u_i, Xb) = -0.4036  F(3,12) = 1.19
(Std. Err. adjusted for 13 clusters in m)

            y1         Robust  Coef.  Std. Err.  t  P>|t|  [95% Conf. Interval]
-------------  ---------  -------  --------  ----- --------  --------  ---------------------
    x1   -7.18556     7.670385  -0.94  0.367   -23.89019  9.526474
    x2   10.71142    15.97737   1.17  0.264   -16.18028  53.52312
    x3   -4.304012   2.360225  -1.84  0.091   -8.483391  0.8016767
     _cons   0.143027   0.0111306  1.29  0.221    -0.0098809  0.0386142

sigma_u  0.027731
sigma_e  0.07453661
rho     0.1221099 (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
F1. (1, 12) = 0.089
Prob > F = 0.7708

Table A34: Light Manufacturing (II) - population to replace X3

```
.xtreg y1 x1 x2 dlnpop, fe robust
Fixed-effects (within) regression                      Number of obs =  117
Group variable: m                                      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
            corr(u_i, Xb) = -0.4031  F(3,12) = 1.18
(Std. Err. adjusted for 13 clusters in m)

            y1         Robust  Coef.  Std. Err.  t  P>|t|  [95% Conf. Interval]
-------------  ---------  -------  --------  ----- --------  --------  ---------------------
    x1   -2.846265     7.692397  -0.41  0.692   -18.18446  12.48159
    x2   23.07224     17.95133  1.34  0.186   -14.53769  60.68163
    dlnpop -4.375204   2.383065  -1.84  0.091   -9.565499  0.8190919
     _cons   0.13444    0.011193  1.20  0.222    -0.0098607  0.0388407

sigma_u  0.0277328
sigma_e  0.07435409
rho     0.12205282 (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
F1. (1, 12) = 0.091
Prob > F = 0.7687
Table A35: Heavy Manufacturing (I)

```
xteg y1 x1 x2 x3, fe robust
Fixed-effects (within) regression
Number of obs  =  117
Group variable: m
Number of groups =  13
R-sq: within  =  0.8315
        Obs per group: min =  9
between  =  0.0071
        avg =  9.0
overall  =  0.0244
        max =  9
F(3,12) =  2.036
Prob > F  =  0.6841
corr(u_i, Xb) = -0.1499
(Std. Err. adjusted for 13 clusters in n)

<table>
<thead>
<tr>
<th>y1</th>
<th>Robust</th>
<th>Coef.</th>
<th>Std. Err.</th>
<th>t</th>
<th>95% Conf. Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>x1</td>
<td></td>
<td>-1.56807</td>
<td>2.68178</td>
<td>-0.60</td>
<td>0.0954</td>
</tr>
<tr>
<td>x2</td>
<td></td>
<td>26.8817</td>
<td>21.06134</td>
<td>1.25</td>
<td>0.242</td>
</tr>
<tr>
<td>x3</td>
<td></td>
<td>-2.076229</td>
<td>2.57361</td>
<td>-1.04</td>
<td>0.320</td>
</tr>
<tr>
<td>_cons</td>
<td></td>
<td>.0093407</td>
<td>.0116087</td>
<td>0.80</td>
<td>0.437</td>
</tr>
</tbody>
</table>

sigma_u = .01889769
sigma_e = .00659977
rho   = .00871353 (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) = 2.036
Prob > F  = 0.6841

Table A36: Heavy Manufacturing (II) - population to replace X3

```
xteg y1 x1 x2 dlnpop, fe robust
Fixed-effects (within) regression
Number of obs  =  117
Group variable: m
Number of groups =  13
R-sq: within  =  0.8315
        Obs per group: min =  9
between  =  0.0071
        avg =  9.0
overall  =  0.0244
        max =  9
F(3,12) =  2.036
Prob > F  =  0.6841
corr(u_i, Xb) = -0.1499
(Std. Err. adjusted for 13 clusters in n)

<table>
<thead>
<tr>
<th>y1</th>
<th>Robust</th>
<th>Coef.</th>
<th>Std. Err.</th>
<th>t</th>
<th>95% Conf. Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>x1</td>
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<td>2.513371</td>
<td>2.857931</td>
<td>0.88</td>
<td>0.397</td>
</tr>
<tr>
<td>x2</td>
<td></td>
<td>29.55110</td>
<td>22.87742</td>
<td>1.29</td>
<td>0.221</td>
</tr>
<tr>
<td>dlnpop</td>
<td></td>
<td>-2.684163</td>
<td>2.190958</td>
<td>-1.23</td>
<td>0.232</td>
</tr>
<tr>
<td>_cons</td>
<td></td>
<td>.0093601</td>
<td>.0116688</td>
<td>0.80</td>
<td>0.438</td>
</tr>
</tbody>
</table>

sigma_u = .01889535
sigma_e = .00656056
rho   = .00860596 (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  = 0.6841
Table A37: Electricity, gas and water supply (I)

```plaintext
.xtreg y1 x1 x2 x3, fe robust
Fixed-effects (within) regression
Number of obs = 117
Group variable: m
Number of groups = 13
R-sq: within = 0.0115
between = 0.1557
overall = 0.0267
Obs per group: min = 9
avg = 9.0
max = 9
corr(u_i, Xb) = 0.0320

(Std. Err. adjusted for 13 clusters in m)

<table>
<thead>
<tr>
<th>y1</th>
<th>Robust</th>
<th>Coef.</th>
<th>Std. Err.</th>
<th>t</th>
<th>Prob &gt;</th>
<th>95% Conf. Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>x1</td>
<td></td>
<td>4.876119</td>
<td>5.035444</td>
<td>0.97</td>
<td>0.352</td>
<td>-6.095172 - 15.84741</td>
</tr>
<tr>
<td>x2</td>
<td></td>
<td>4.031504</td>
<td>22.11094</td>
<td>0.12</td>
<td>0.831</td>
<td>-13.34326 - 23.39577</td>
</tr>
<tr>
<td>x3</td>
<td></td>
<td>3.212256</td>
<td>2.087078</td>
<td>1.54</td>
<td>0.150</td>
<td>-1.334825 - 7.759878</td>
</tr>
<tr>
<td>cons</td>
<td></td>
<td>-0.029399</td>
<td>0.0097066</td>
<td>-2.36</td>
<td>0.036</td>
<td>-0.0441131 - 0.0041667</td>
</tr>
</tbody>
</table>

sigma_u = .02143799
sigma_e = .00818097
rho = .00214855 (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) = 1.077
Prob > F = 0.3857
```

Table A38: Electricity, gas and water supply (II) - population to replace X3

```plaintext
.xtreg y1 x1 x2 dlnpop, fe robust
Fixed-effects (within) regression
Number of obs = 117
Group variable: m
Number of groups = 13
R-sq: within = 0.0115
between = 0.1557
overall = 0.0267
Obs per group: min = 9
avg = 9.0
max = 9
corr(u_i, Xb) = 0.0320

(Std. Err. adjusted for 13 clusters in m)

<table>
<thead>
<tr>
<th>y1</th>
<th>Robust</th>
<th>Coef.</th>
<th>Std. Err.</th>
<th>t</th>
<th>Prob &gt;</th>
<th>95% Conf. Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>x1</td>
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<td>1.665826</td>
<td>5.007096</td>
<td>0.33</td>
<td>0.745</td>
<td>-9.243699 - 12.57535</td>
</tr>
<tr>
<td>x2</td>
<td></td>
<td>1.071537</td>
<td>22.16182</td>
<td>0.07</td>
<td>0.944</td>
<td>-46.89680 - 50.11187</td>
</tr>
<tr>
<td>dlnpop</td>
<td></td>
<td>1.229865</td>
<td>2.105069</td>
<td>1.53</td>
<td>0.151</td>
<td>-1.357862 - 7.837993</td>
</tr>
<tr>
<td>cons</td>
<td></td>
<td>-0.029359</td>
<td>0.0097592</td>
<td>-2.36</td>
<td>0.036</td>
<td>-0.0442495 - 0.0041223</td>
</tr>
</tbody>
</table>

sigma_u = .02143297
sigma_e = .00812084
rho = .00211631 (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) = 1.077
Prob > F = 0.3857
```
### Table A39: Construction (I)

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

Fixed-effects (within) regression                       Number of obs   =   117
Group variable: m                                      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)      =   2.323  Prob > F    =   0.0909

(Std. Err. adjusted for 13 clusters in m)

<table>
<thead>
<tr>
<th></th>
<th>Robust</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
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<td>y1</td>
<td>Coef.</td>
<td>Std. Err.</td>
<td>t</td>
</tr>
<tr>
<td></td>
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</tr>
<tr>
<td>x1</td>
<td>-22.35255</td>
<td>21.21779</td>
<td>-1.05</td>
<td>0.313</td>
</tr>
<tr>
<td>x2</td>
<td>75.19556</td>
<td>42.94998</td>
<td>1.82</td>
<td>0.094</td>
</tr>
<tr>
<td>x3</td>
<td>5.046003</td>
<td>6.318253</td>
<td>0.80</td>
<td>0.440</td>
</tr>
<tr>
<td></td>
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</tr>
<tr>
<td></td>
<td>cons</td>
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<td>0.307797</td>
<td>0.37</td>
</tr>
<tr>
<td>sigma_u</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sigma_e</td>
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<tr>
<td>rho</td>
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<td></td>
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</tr>
</tbody>
</table>

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
F(3,12)      =   3.47  Prob > F    =   0.0500

(Trc 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

### Table A40: Construction (II) - population to replace X3

```
. xtregr y1 x1 x2 dlipop, fe robust

Fixed-effects (within) regression                       Number of obs   =   117
Group variable: m                                      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)      =   2.323  Prob > F    =   0.0500

(Std. Err. adjusted for 13 clusters in m)

<table>
<thead>
<tr>
<th></th>
<th>Robust</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>y1</td>
<td>Coef.</td>
<td>Std. Err.</td>
<td>t</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>x1</td>
<td>-27.38829</td>
<td>17.7619</td>
<td>-1.54</td>
<td>0.149</td>
</tr>
<tr>
<td>x2</td>
<td>75.14054</td>
<td>46.2523</td>
<td>1.60</td>
<td>0.144</td>
</tr>
<tr>
<td>dlipop</td>
<td>0.030588</td>
<td>0.376617</td>
<td>0.79</td>
<td>0.444</td>
</tr>
<tr>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>cons</td>
<td>0.011381</td>
<td>0.0309371</td>
<td>0.37</td>
</tr>
<tr>
<td>sigma_u</td>
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<td></td>
</tr>
<tr>
<td>sigma_e</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>rho</td>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
F(3,12)      =   2.323  Prob > F    =   0.0500

(Trc 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

(Trc of variance due to u_i)
Table A41: W/sale, Retail Trade; Hotels and Rest. (I)

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

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

R-sq: within = 0.0525  Obs per group: min = 9
between = 0.0665  avg = 9.0
overall = 0.0123  max = 9

corr(u_i, Xb) = -0.5788

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

| y1          | Robust     | Coef. | Std. Err. | t     | P>|t|  | [95% Conf. Interval] |
|-------------|------------|-------|-----------|-------|------|----------------------|
| x1          | -61.15235  | 54.58952 | -1.12    | 0.285 | .180 | -0.9025 57.7882     |
| x2          | 121.2561   | 141.9327 | 0.85     | 0.410 | .506 | -107.1987 439.5909  |
| x3          | -69.42766  | 50.55852 | -1.37    | 0.195 | .168 | -179.5852 40.72089  |
| _cons       | .429306    | .2427310 | 1.77     | 0.162 | .099 | -0.9561 1.201731    |
| sigma_u     | .39280011  |        |          |       |      |                      |
| 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) = 3.305
Prob > F = 0.0001

Table A42: W/sale, Retail Trade; Hotels and Rest. (II) - population to replace X3

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

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

R-sq: within = 0.0522  Obs per group: min = 9
between = 0.0661  avg = 9.0
overall = 0.0124  max = 9

corr(u_i, Xb) = -0.5764

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

| y1          | Robust     | Coef. | Std. Err. | t     | P>|t|  | [95% Conf. Interval] |
|-------------|------------|-------|-----------|-------|------|----------------------|
| x1          | 8.186516   | 17.67514 | 0.46     | 0.651 | .001 | -30.3142 46.79743   |
| x2          | 100.8505   | 129.1659 | 1.48     | 0.165 | .000 | -232.3601 442.07281 |
| dinpop      | -69.6697   | 50.544174 | -1.37   | 0.197 | .168 | -180.6422 41.34282  |
| _cons       | .429151    | .2430714 | 1.76     | 0.164 | .003 | -.1017636 1.060055  |
| sigma_u     | .39100039  |        |          |       |      |                      |
| sigma_e     | .66103332  |        |          |       |      |                      |
| rho         | .17373432  |        |          |       |      | (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

\[ Y = \text{employment} \]
\[ Y_2 = \text{immigrants from EECs / total population} \]
\[ Y_3 = \text{immigrants from MPCs / total population} \]
\[ Y_4 = \text{native population / total population} \]

Table A43: Mining and quarrying (I)

```
.xtreg y2 y3 y4, fe cluster(n)
Fixed-effects (within) regression
  Number of obs = 130
  Number of groups = 13
R-sq:      within  = 0.0272
          between  = 0.0080
          overall  = 0.0000
  Obs per group: min = 10
                 avg  = 10.0
                 max  = 10
  corr(u_i, Xb) = -0.0174
  Probit > F  =  0.3518
(Std. Err. adjusted for 13 clusters in n)
```

\( F(2,12) = 61.543 \)

H0: no first-order autocorrelation
Wooldridge test for autocorrelation in panel data

\( F(2,12) = 1.14 \)

\( \text{Prob} > F = 0.3518 \)

Table A44: Mining and quarrying (II) - population to replace Y4

```
.xtreg y2 y3 lnpop, fe cluster(n)
Fixed-effects (within) regression
  Number of obs = 130
  Number of groups = 13
R-sq:      within  = 0.0868
          between  = 0.0860
          overall  = 0.0879
  Obs per group: min = 10
                 avg  = 10.0
                 max  = 10
  corr(u_i, Xb) = -0.9877
  Probit > F  =  0.2802
(Std. Err. adjusted for 13 clusters in n)
```

\( F(3,12) = 1.80 \)

H0: no first-order autocorrelation
Wooldridge test for autocorrelation in panel data

\( F(1,12) = 66.072 \)

\( \text{Prob} > F = 0.0000 \)
### Table A45: Food products, beverages and tobacco (I)

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

<table>
<thead>
<tr>
<th>Fixed-effects (within) regression</th>
<th>Number of obs</th>
<th>130</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group variable: m</td>
<td>Number of groups</td>
<td>13</td>
</tr>
<tr>
<td>R-sq: within = 0.0459</td>
<td>Obs per group: min</td>
<td>10</td>
</tr>
<tr>
<td>between = 0.0017</td>
<td>avg = 10.0</td>
<td></td>
</tr>
<tr>
<td>overall = 0.0009</td>
<td>max = 10</td>
<td></td>
</tr>
<tr>
<td>corr(u_i, Xb) = -0.0462</td>
<td>F(2,12) = 1.51</td>
<td>Prob &gt; F = 0.2810</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>y</th>
<th>Robust Coef.</th>
<th>Std. Err.</th>
<th>t</th>
<th>[95% Conf. Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td>y2</td>
<td>(dropped)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>y3</td>
<td>35.04311</td>
<td>35.77764</td>
<td>0.98</td>
<td>0.247 -42.90932 112.29959</td>
</tr>
<tr>
<td>y4</td>
<td>-0.062821</td>
<td>0.30087</td>
<td>-0.01</td>
<td>0.992 -41.90439 13.87993</td>
</tr>
<tr>
<td>_cons</td>
<td>11.60933</td>
<td>6.40355</td>
<td>1.83</td>
<td>0.993 -2.258206 25.64607</td>
</tr>
</tbody>
</table>

| sigma_u  | 1.2966173    |            |       |                      |
| sigma_e  | 0.5254597    |            |       |                      |
| rho      | -0.9834525   | (fraction of variance due to u_i) | |

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model

H0: sigma(i)^2 = sigma2 for all i

chi2 (13) = 751.11
Prob>chi2 = 0.0000

Wooldridge test for first-order autocorrelation in panel data

H0: no first-order autocorrelation

F(1, 12) = 10.166
Prob > F = 0.0078

### Table A46: Food products, beverages and tobacco (II) - population to replace Y4

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

<table>
<thead>
<tr>
<th>Fixed-effects (within) regression</th>
<th>Number of obs</th>
<th>130</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group variable: m</td>
<td>Number of groups</td>
<td>13</td>
</tr>
<tr>
<td>R-sq: within = 0.1707</td>
<td>Obs per group: min</td>
<td>10</td>
</tr>
<tr>
<td>between = 0.3768</td>
<td>avg = 10.0</td>
<td></td>
</tr>
<tr>
<td>overall = 0.3757</td>
<td>max = 10</td>
<td></td>
</tr>
<tr>
<td>corr(u_i, Xb) = -0.8967</td>
<td>F(3,12) = 4.43</td>
<td>Prob &gt; F = 0.0257</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>y</th>
<th>Robust Coef.</th>
<th>Std. Err.</th>
<th>t</th>
<th>[95% Conf. Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td>y2</td>
<td>5.782799</td>
<td>3.163023</td>
<td>1.83</td>
<td>0.092 -1.108837 12.67444</td>
</tr>
<tr>
<td>y3</td>
<td>55.22522</td>
<td>33.099538</td>
<td>1.67</td>
<td>0.120 -16.78828 127.2439</td>
</tr>
<tr>
<td>lnpop</td>
<td>-1.256344</td>
<td>.6127465</td>
<td>-2.05</td>
<td>0.023 -1.294300 6.978599</td>
</tr>
<tr>
<td>_cons</td>
<td>32.63267</td>
<td>10.23967</td>
<td>3.19</td>
<td>0.003 10.32236 54.94299</td>
</tr>
</tbody>
</table>

| sigma_u  | 2.3014756    |            |       |                      |
| sigma_e  | 0.4920233    |            |       |                      |
| rho      | .99954315     | (fraction of variance due to u_i) | |

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model

H0: sigma(i)^2 = sigma2 for all i

chi2 (13) = 175.91
Prob>chi2 = 0.0000

Wooldridge test for first-order autocorrelation in panel data

H0: no first-order autocorrelation

F(1, 12) = 11.580
Prob > F = 0.0052
### Table A47: Light Manufacturing (I)

```
. xtregr y2 y3 y4, fe cluster(n)

Fixed-effects (within) regression

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>y</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>y2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>y3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>y4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cons</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group variable: a</th>
<th>n</th>
<th>Number of groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>13</td>
<td></td>
</tr>
</tbody>
</table>

| R-sq             |          |         |         |
| within           | 0.6297   |         |         |
| between          | 0.6065   |         |         |
| overall          | 0.0001   |         |         |

| corr(u_i, Xb)    | -0.0344  |         |         |

| F(2,12)          | 5.798    |         |         |

<table>
<thead>
<tr>
<th>(Std. Err. adjusted for 13 clusters in n)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>y</th>
<th>Robust</th>
<th>Std. Err.</th>
<th>t</th>
<th>[95% Conf. Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td>y2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>y3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>y4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cons</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

<table>
<thead>
<tr>
<th>H0: sigma(i)^2 = sigma^2 for all i</th>
</tr>
</thead>
<tbody>
<tr>
<td>chi2 (13)</td>
</tr>
<tr>
<td>Prob = chi2</td>
</tr>
</tbody>
</table>

Woolridge test for autocorrelation in panel data

<table>
<thead>
<tr>
<th>H0: no first-order autocorrelation</th>
</tr>
</thead>
<tbody>
<tr>
<td>F(1, 12)</td>
</tr>
<tr>
<td>Prob &gt; F</td>
</tr>
</tbody>
</table>

### Table A48: Light Manufacturing (II) - population to replace Y4

```
. xtregr y2 y3 ln(pop), fe cluster(n)

Fixed-effects (within) regression

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>y</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>y2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>y3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ln(pop)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cons</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group variable: a</th>
<th>n</th>
<th>Number of groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>13</td>
<td></td>
</tr>
</tbody>
</table>

| R-sq             |          |         |         |
| within           | 0.2080   |         |         |
| between          | 0.9364   |         |         |
| overall          | 0.9271   |         |         |

| corr(u_i, Xb)    | -0.9974  |         |         |

| F(3,12)          | 6.738    |         |         |

<table>
<thead>
<tr>
<th>(Std. Err. adjusted for 13 clusters in n)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>y</th>
<th>Robust</th>
<th>Std. Err.</th>
<th>t</th>
<th>[95% Conf. Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td>y2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>y3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ln(pop)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cons</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

<table>
<thead>
<tr>
<th>H0: sigma(i)^2 = sigma^2 for all i</th>
</tr>
</thead>
<tbody>
<tr>
<td>chi2 (13)</td>
</tr>
<tr>
<td>Prob = chi2</td>
</tr>
</tbody>
</table>

Woolridge test for autocorrelation in panel data

<table>
<thead>
<tr>
<th>H0: no first-order autocorrelation</th>
</tr>
</thead>
<tbody>
<tr>
<td>F(1, 12)</td>
</tr>
<tr>
<td>Prob &gt; F</td>
</tr>
</tbody>
</table>
```
Table A49: Heavy Manufacturing (I)

.xtreg y2 y3 y4, fe cluster(n)
Fixed-effects (within) regression  Number of obs =  130
Group variable: m  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

corr(u_i, Xb) =  0.0756  
F(2, 12) =  1.79  Prob > F =  0.2887
(Std. Err. adjusted for 13 clusters in n)

y         Robust     Coef.   Std. Err.  t  P>|t|   [95% Conf. Interval]
y2          (dropped)                  
y3         0.35328   33.446   1.06   0.088   -20.61776  133.8643  
y4         7.003894   6.740877  1.16   0.270   -6.883215  22.9412  
_cons     5.122202   6.742348  0.76   0.462   -9.569112  19.81152  
sigma_u   1.1271793  
sigma_e   0.9966545  (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
ch2(13) =  2163.51
Prob>ch2 =  0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
F(1, 12) =  13.584  Prob > F =  0.0031

Table A50: Heavy Manufacturing (II) - population to replace Y4

.xtreg y2 y3 lnpop, fe cluster(n)
Fixed-effects (within) regression  Number of obs =  130
Group variable: m  Number of groups =  13
R-sq: within =  0.1894  Obs per group: min =  10
between =  0.0811  avg =  10.0
overall =  0.0837  max =  10

corr(u_i, Xb) =  -0.9862  
F(3, 12) =  3.74  Prob > F =  0.0416
(Std. Err. adjusted for 13 clusters in n)

y         Robust     Coef.   Std. Err.  t  P>|t|   [95% Conf. Interval]
y2         -3.341425   4.350725  -0.77   0.459   -13.74757  7.0649  
y3         79.99944   27.44116  2.91   0.004   20.16959  139.8492  
lnpop     -1.638868   0.728653  -2.25   0.044   -3.226537  -0.051295  
_cons     40.32033   12.18378  3.31   0.006   13.77415  66.86651  
sigma_u   2.7336403  
sigma_e   0.9950744  (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
ch2(13) =  456.75
Prob>ch2 =  0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
F(1, 12) =  13.996  Prob > F =  0.0035
Table A51: Electricity, gas and water supply (I)

```
. xtab y2 y3 y4 y5, fe cluster(n)
Fixed-effects (within) regression
Group variable: m
R-sq: within = 0.2932
between = 0.3980
overall = 0.3921
Obs per group: min = 10
avg = 16.0
max = 10
corr(u_i, Xb) = -0.3329
F(3,12) = 2.37
Prob > F = 0.0903
(Std. Err. adjusted for 13 clusters in n)

|     y     | Robust Coef. | Std. Err. | t     | P>|t| [95% Conf. Interval] |
|----------|--------------|-----------|-------|-------------------------|
| y2       |              |           |       |                         |
| y3       |              |           |       |                         |
| y4       |              |           |       |                         |
| y5       |              |           |       |                         |
| _cons    |              |           |       |                         |

sigma_u  1.0201014
sigma_e 0.23155369
rho 0.9999988 (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) = 4172.91
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
```

Table A52: Electricity, gas and water supply (II) - population to replace Y4

```
. xtab y2 y3 lnpop y5, fe cluster(n)
Fixed-effects (within) regression
Group variable: m
R-sq: within = 0.7159
between = 0.1865
overall = 0.1836
Obs per group: min = 10
avg = 10.0
max = 10
corr(u_i, Xb) = -0.9958
F(4,12) = 324.03
Prob > F = 0.0000
(Std. Err. adjusted for 13 clusters in n)

|     y     | Robust Coef. | Std. Err. | t     | P>|t| [95% Conf. Interval] |
|----------|--------------|-----------|-------|-------------------------|
| y2       |              |           |       |                         |
| y3       |              |           |       |                         |
| lnpop    |              |           |       |                         |
| y5       |              |           |       |                         |
| _cons    |              |           |       |                         |

sigma_u 13.043973
sigma_e 0.99907225 (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 A53: Construction (I)

```
xrreg y2 y3 y4 y5, fe robust
Fixed-effects (within) regression
   Number of obs = 130
   Number of groups = 13
R-sq:  within = 0.5451  Obs per group: min = 10
       between = 0.2965    avg = 10.0
       overall = 0.2057    max = 10
       corr(u_i, Xb) = -0.5383
                     F(3, 12) = 7.02
                     Prob > F = 0.0056
                     (Std. Err. adjusted for 13 clusters in n)

|        y         | Robust Coef. | Std. Err. | t     | P>|t|   | 95% Conf. Interval |
|-----------------|--------------|-----------|-------|-------|------------------|
| y2              | (dropped)    |           |       |       |                  |
| y3              | -47.19967    | 65.83421  | -0.72 | 0.487 | -190.6301 - 96.25975 |
| y4              | 4.368879     | 10.79596  | 0.40  | 0.693 | -19.1615 - 27.8326 |
| y5              | 0.675917     | 0.3217963 | 2.03  | 0.021 | 0.662577 - 1.468526 |
| _cons           | -2.20785     | 9.087008  | -0.24 | 0.112 | -22.0674 - 17.59104 |

sigma_u = 1.1208527
sigma_e = 0.3791871
rbo = .9774688
```

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) = 1.962
Prob > F = 0.3231

Table A54: Construction (II) - population to replace Y4

```
xrreg y2 y3 lnpop y5, fe robust
Fixed-effects (within) regression
   Number of obs = 130
   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
       corr(u_i, Xb) = -0.9909
                     F(4, 12) = 9.63
                     Prob > F = 0.0010
                     (Std. Err. adjusted for 13 clusters in n)

|        y         | Robust Coef. | Std. Err. | t     | P>|t|   | 95% Conf. Interval |
|-----------------|--------------|-----------|-------|-------|------------------|
| y2              | 3.910681     | 19.00681  | 0.21  | 0.840 | -37.4926 - 45.32396 |
| y3              | -16.589      | 33.02559  | -0.50 | 0.625 | -88.54559 - 55.36759 |
| lnpop           | -3.848497    | 5.122851  | -0.71 | 0.490 | -14.81118 - 7.12284 |
| y5              | 1.389026     | 0.522684  | 2.61  | 0.046 | 0.301416 - 2.479495 |
| _cons           | -61.0255     | 80.08325  | 0.76  | 0.461 | -113.4699 - 235.5119 |

sigma_u = 4.1685117
sigma_e = .360682626
rbo = .998409091
```

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i
chi2(13) = 8334.55
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 A55: W/sale, Retail Trade; Hotels and Rest. (I)

. xtregr y2 y3 y4 y5, fe robust
Fixed-effects (within) regression

<table>
<thead>
<tr>
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<th>Number of obs</th>
<th>Number of groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group variable: m</td>
<td>130</td>
<td>13</td>
</tr>
<tr>
<td>R-sq: within</td>
<td>0.3857</td>
<td>Obs per group:</td>
</tr>
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<td></td>
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<td>min = 10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>avg = 10.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>max = 10</td>
</tr>
<tr>
<td>corr(u_i, Xb)</td>
<td>-0.3298</td>
<td>F(3,12) = 22.93</td>
</tr>
</tbody>
</table>

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

| y    | Robust Coef. | Std. Err. | t     | P>|t| | [95% Conf. Interval] |
|------|--------------|-----------|-------|-----|---------------------|
| y2   |              |           |       |     |                     |
| y3   |              |           |       |     |                     |
| y4   |              |           |       |     |                     |
| interp |              |           |       |     |                     |
| cons | -8.416104    | 18.19901  | -0.46 | 0.652 | -48.06834          |

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model
H0: sigma(i)^2 = sigma^2 for all i

chisq (13) = 65624.57
Prob>chisq = 0.0000

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation

F(1, 12) = 1046.216
Prob > F = 0.0000

Table A56: W/sale, Retail Trade; Hotels and Rest. (II) - population to replace Y4

. xtregr y2 y3 lnpop y5, fe robust
Fixed-effects (within) regression

<table>
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<tr>
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<th>Number of obs</th>
<th>Number of groups</th>
</tr>
</thead>
<tbody>
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<td>Group variable: m</td>
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<td>13</td>
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<tr>
<td>R-sq: within</td>
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<td>Obs per group:</td>
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<td>avg = 10.0</td>
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<tr>
<td></td>
<td></td>
<td>max = 10</td>
</tr>
<tr>
<td>corr(u_i, Xb)</td>
<td>-0.9909</td>
<td>F(4,12) = 37.13</td>
</tr>
</tbody>
</table>

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

| y    | Robust Coef. | Std. Err. | t     | P>|t| | [95% Conf. Interval] |
|------|--------------|-----------|-------|-----|---------------------|
| y2   |              |           |       |     |                     |
| y3   |              |           |       |     |                     |
| lnpop |              |           |       |     |                     |
| y5   |              |           |       |     |                     |
| interp |              |           |       |     |                     |
| cons | 51.43497     | 26.13944  | 1.96  | 0.073 | -5.605128          |

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model
H0: sigma(i)^2 = sigma^2 for all i

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

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation

F(1, 12) = 955.471
Prob > F = 0.0000