

“De Dorpstraat, die is van mij!”



Small cities and large towns along the Continental littoral

Johan P. Westenburg

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Abstract: How are macroeconomic measures affected by local geography, housing and education? This study tests regional purchase parity data as a dependent variable subject to location, housing prices and estimations of post-secondary education. Limiting the set of inquiry to small cities along the Continental European littoral, the results of a robust regression show that Purchase Power Standards (PPS) at the regional level are modestly impacted by changes in the index of stand-alone housing, the level of tertiary education and the distance of a small city to a metropolitan statistical area of more than one hundred thousand people. Among the salient policy implications derived from these facts, the paper recommends tempering the faith invested in the creation of local educational institutions and recommends a reassessment of the value placed in the regenerative potential of new, stand-alone, housing development. The conclusion also recommends utilizing city-level administrative budget data, regional retail microdata and tourist demographics as viable tools for further research.

"In the social life of human beings, the idea of 'just order' is central. Such an order is normative, not natural. The biological order has evolved primarily from the natural process of competitive behavior. If human beings want to establish norms for a 'just order', they have to free themselves from this biological legacy: but in doing so, they have to retain their individuality as it is expressed in personally motivated actions."

- Manfred Eigen and Ruthild Winkler, Laws of the Game, 1981.

The objective for the study of small cities

What is the use of a small city in an era of globalization? How might urban systems with limited means successfully compete for capital, labor and technology? If economies of scale are the overarching justification for the allocation of our time and investment, what is the value of a town full of aging people, outmoded infrastructure and logistic inefficiencies? The small coastal cities of Continental Europe might be described as such places. The vital roles they performed in decades past are no more. Over the road transport has rendered multiple fisheries anachronistic. Hospitality related to the ferry industry is moribund as cheap air travel has come to dominate the choices for leisure and business transportation. Small harbors are less the vital hubs of commerce than quaint, nostalgic, points of interest for tourists. What can we expect the future to hold for these former engines of regional growth?

In the nineteen seventies, small-town European life faced considerable upheaval. The international oil crisis of 1973 contributed to a reassessment of the role of unions as the arbiter of workers' privileges and rights. A range of global political matters from the aftershocks of colonialism to the Cold War gamesmanship of Russia and the United States were brought into the living rooms of provincial homes by newly middle class students. My generation, born in the twenty years after the Second World War, were witnesses and actors in a transformation of small town life that reverberates throughout the European Union as we know it today.

Of course, there are thousands of such towns and cities throughout Europe and an effort to examine the entire set is beyond the scope of this paper by virtue of their geographic and economic diversity. In conceiving a topic relevant to my interest in economic development, I looked to the 2005 purchase of our home in the coastal city of Oostende, Belgium as the starting point for building a set for analysis. There are approximately 63 cities along the coasts of the Continental Atlantic and Western Mediterranean that have a population of thirty to one hundred thousand residents and Oostende is just above the middle of that range. Though these cities may be quite different in how

they developed and how they survive and prosper, their proximity to the sea indicates shared industries that have prevailed historically or continue even today. Fishing and shipping, and the service trades oriented to travelers, traders and tourists have a prominent role in any coastal city. Beyond this observation and my personal investment, studying small cities of the Continental littoral represents a supplement to the study of the larger urban port agglomerations that figure more clearly in the economic life of a territory.

In 1965, Jeffrey Williamson wrote,

“economists have long recognized the existence and stubborn persistence of regional dualism at all levels of national development and throughout the historical experience of almost all ... developed countries. In spite of the ... attention which this problem has attracted, very little progress has been made in formulating and testing a general explanation for the occurrence of inequality in the spatial distribution of national income. ...Frenchmen, Italians, Brazilians, and Americans still tend to treat their (inequality) problems as unique to their own national experience with economic growth.”¹

Forty-five years later, the conditions in Europe are unchanged.² Unemployment rates vary from place to place, bonds rates range considerably and the consumer price index across the EU is anything but uniform. Persistently, the dominant approach to explaining the relationship of national accounts to their national populations has been to concentrate on the aggregate economic impact of large cities and to use that explanation as a tool to assess the overall economic picture. Agriculture takes up just under two percent of the GDP³ and small business comprises roughly another fifty percent.⁴ Given these observations, creating economic stories from large city data where farms and small business are less important to the overall economic life of the area omits a significant depth of field when constructing an overall picture of our regions.

Using regional data gathered from the set of small cities and large towns along the Continental littoral, this paper reviews academic and policy literature of the urban set and proposes a model that

¹ p.3, Williamson

² Though she now seems to be saddled with the consequences of an 'all-for-one-one-for-all' approach to economic policy; on January 13 of 2012, The American rating agency, Standard & Poor, downgraded its ratings for nine European countries. The effects of such downgrades in the past have caused an increase in the stresses of an already fragile European Union.

³ 1.9 percent of employed United States labor force worked in agriculture (2000); Agricultural GDP as a share of total GDP (2002) = 0.7 percent. Source: Compiled by Economic Research Service, USDA. Share of workforce employed in agriculture, for 1900-1970, Historical Statistics of the United States; for 2000, calculated using data from Census of Population; agricultural GDP as part of total GDP, calculated using data from the Bureau of Economic Analysis. <<http://www.ers.usda.gov/publications/eib3/eib3.htm>>

⁴ p.1, Kobe, 2007

tests whether housing, education and other factors have a bearing on purchase power standards at the regional level. The results will show that purchase power standards are negatively impacted by multiple factors. From the analysis of the model, the conclusion is drawn that policy recommendations advocating the establishment of bureaucratic, administrative or academic institutions are overvalued for cities within this set.

A review of the literature

The salient issues relevant to Europe's small cities and large towns are summed up in a few ideas: the role of the city with respect to the territory, the persistence of history and their future viability. There are thousands of articles and books that address the 'big questions' asked in the first paragraph of this paper but only hundreds of them use small city data in an effort to formulate a convincing answer. There is as much an absence of unifying sentiments in this literature as there is an apparent lack of common aspiration among residents of the Eurozone. This should come as no surprise to the American reader. While only nine percent of the European Union is still considered rural and linked only by a small regional center, such conditions apply to twenty-one percent of the United States. According to the United States Bureau of Census, over eighty-seven percent of the American population stays within the town of their birth and a mere four and one-half million moved outside of their home state during the last decade.⁵ Thus, even in a nation that perceives itself to be highly mobile, familiarity and local life form the national narrative. In much the same way, small town life still commands a significant portion of national attention throughout the European Union. Nonetheless, English-language economic research ponders ever larger cities or, its extreme obverse, the dwindling population of the countryside, compelling small-town administrators to opt for outsize urban policies that may not address demographic conditions of their constituency.

An American cultural example that effectively illustrates this odd double standard between 'big city thinking' and 'small town dreaming' is found in Thornton Wilder's iconic play, *Our Town*. Like the playwright's Grover's Corners, cities and towns with a population of thirty to one hundred thousand residents are neither horribly dysfunctional nor remarkably outstanding. Though they are considered rather dull, "most of us are gripped by the very small details of our day"⁶ and perhaps for this reason more than others, the study of these modest communities has been only sporadically undertaken.

James Simmons' proposes that spatial organisation of urban systems is composed of three matrices; attributes, behaviors and interdependency. For Simmons, the attribute matrix holds information

⁵ <http://www.census.gov/population/www/socdemo/migrate/cps2009.html>. This statistic can be employed in a variety of ways; see Glaeser and Gottlieb, p.6 (2009). Americans do change homes and counties in much greater numbers and with greater frequencies than Europeans. However, the movement is from one familiar place to a comparably familiar place. The argument posed in this essay is that changing monetary systems is akin to a move from a familiar place to an unfamiliar place.

⁶ David Cromer quoted in an interview with CBS Sunday Morning, January 30, 2010. Extracted 2/25/2012 <<http://youtu.be/Hu-Gtv7lv4>>

about the size and governance of a city, the behavior matrix addresses the interaction of people in terms of data, goods and money, and the interdependency matrix holds quantifiable information about the interaction of urban systems.⁷ I believe all three of matrices help to tell the story of a city's role, its persistence and its future. Using another three-pronged simplification, Abraham Maslow argued in 1943 that we all seek out shelter, nourishment and sexual pleasure. Cities provide an efficient delivery system for these demands. As our behaviors become codified according to evolving social structures, these basic demands develop into forms that are highly stylized: shelter becomes architecture, nourishment becomes gastronomy and sexual pleasure becomes subsumed in the myriad forms of recreation, cultural events and illicit pleasures that a city might have to offer.

Nonetheless, the question of how to assess a city lacks consensus. In an episode of the American program Radiolab, Los Alamos physicists Luis Bettancourt and Geoffrey West discussed the predictive power of their power law function which relies on relative population as one of several independent variables.⁸ They find that patent filing, a common proxy for 'creativity', gross metropolitan product, and crime statistics, can all be roughly inferred by plugging the marginal population value into the power law. As noted by the economist Edward Glaeser, this power law was first applied to the study of cities by the German geographer, Felix Auerbach, who compared a group of German cities immediately prior to World War One.⁹ To the right is an illustration of Auerbach's 1913 table of German city rankings and population.¹⁰ It is perhaps the best way to help evaluate the importance of rank and city size. In 1913, Wilhelmshafen ranked at number sixty five with a population of seventy-eight

Nr.		Population (in thousands) Indbyggertal
5.	Köln	593
10.	Nürnberg	414
15.	Chemnitz	306
20.	Stettin	258
25.	Strassburg	191
30.	Posen	157
35.	Braunschweig	144
40.	Kattowitz	128
45.	Zwickau	118
50.	Hamborn	103
55.	Oberhausen	90
60.	Görlitz	86
65.	Wilhelmshafen	78
70.	Pforzheim	69
75.	Harburg	67
80.	Koblenz	65
85.	Mers	60
90.	Brandenburg	54

⁷ p.61, Simmons, J.

⁸ The Bettencourt-West algorithm was presented in the peer-reviewed creative commons, Public Library of Science (<http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.001354>) on November 10, 2010. For a podcast of the Radiolab program, go to <http://www.radiolab.org/2010/oct/08/>

⁹ See Edward Glaeser's blog, Economix, April 20, 2010 at <http://economix.blogs.nytimes.com/2010/04/20/a-tale-of-many-cities/#more-61303>.

¹⁰ The online source for the original Auerbach study is at (<http://www.tidsskrift.dk/print.jsp?id=91360>). the digital archives for the Danish National Library archive of National Economics, Volume 3, Issue 21, 1913. * 'AK' is Auerbach's mathematically derived 'Population Concentration' for Germany and corresponds to a relationship table covering the 94 towns in the republic with at least 50000 inhabitants.

thousand inhabitants. Today, the city ranks at number ninety-five in Germany with a population only four percent larger one century later. Does this suggest the city is remarkably stable, supporting the notion that urban dynamics display long-term memory? Or does the ten percent decline in population over the last twenty years suggest that Wilhelmshaven has had struggles that contradict the story of stable growth?

In the absence of a single method, the problem of comparison is challenging and some simplification is helpful. As pointed out by Maureen Cropper in 1981, economists have long argued for conceptualizing the city as a homogenous entity when estimating hedonic prices attributed to amenities. But, in 1978, Malcolm Getz contended, “environmental attributes may vary within a metropolitan area as well as between them.”¹¹ Nonetheless, Cropper maintains the scale of amenities is most easily represented *solely by population*.¹² Though she acknowledges that measuring individual amenities is worthwhile, it is also time consuming and causes problems due to correlation. This is no doubt true, but, quoting Getz, “while economic theory usually considers more to be more of the same, for cities, more restaurants, more radio stations, more animals in the zoo, and so on, are better than simply more of the same.”¹³

One might construe “better than simply more of the same” to imply an embrace of regional economic geography. Yet, in the same essay, Getz finds that “regional differentials are modest. No significant regional differentials are found in the aggregate.”¹⁴ Writing in America during the economic malaise that marred the Carter Administration, this observation makes sense. Yet, the “footloose consumer” who is arguably responsible for the minor variances observed from one American region to another has made comparatively rare appearances in European life. Intuitively, the notion that more amenities in a city act as an attractor for even more amenities makes sense and the lesson is rigorously stated in Harold Hotelling’s 1929 principle of minimum differentiation: identical firms tend to cluster close together. Though perhaps a chicken and egg problem, a ‘central place’ friction might make the case for the observed reluctance of small city coastal Europeans to move on. Perhaps this is why we observe a literature of regional economics in Europe that doesn’t get into the mainstream in the American economic writing.

¹¹ Getz, p.451

¹² Cropper, p.366

¹³ Getz, p.452

¹⁴ *idem*, p.457

Though Bettancourt, West and Glaeser are doubtless correct in observing some large behavior trends in massive population counts, a warm body count at the small city level is an independent variable of unknown influence. Allowing for the assumption that amenities are subject to a law of diminishing returns, residents of small cities will regard the few amenities accorded them as 'simply better than more of the same'. Intuitively this makes sense. Large cities of Europe such as Paris or Bruxelles have populations that certainly act as an attractor for more warm - possibly smart, talented, rich or hardworking - bodies. Any firm would be happy to access such a consumer population. But to say that population is the prime mover for small cities is unlikely given the evidence of a decline in the growth rate observed in the cities of the Continental littoral. It should also be noted the tipping point argument recently popularized by Malcolm Gladwell - a population in decline engenders greater decline - is not consistently borne out by the population figures of these cities. The overall rate of decline is diminished by growth in some cities in the set.

Musing on the elusive question: why do people stay in small cities? Why do people come to the grey oceanside cities of the Atlantic or less glamorous shores of the Mediterranean? Perhaps population is not the driver of a small city's economic health but rather akin to a prisoner of the community's economic past. Though certainly useful as an illustrative device, it does not lend itself to being a useful variable in a simple regression model.

Rejecting the opportunity to look at the complex relationship of population within the set should not be interpreted to mean that it is not relevant. Population trends are useful and the effects of a 'tipping point' are noted throughout the literature about housing and education. With respect to this important link, population changes over a sixty year period for some cities are appended. This 'long view' captures the winding down of the Marshall Plan (1948-1952) and the decline of empire in Belgium, The Netherlands, France, Portugal and Italy. It also takes into account the rise of regional secessionist movements in Spain and France. The extraordinary abundance of consumer goods that flooded post-war Europe under the flag of American largesse, political expediency and economic commitment fundamentally challenged the way the pan-European community did business. The consensus for liberal economists is that, without the Marshall plan's economic models - truly American in character and content - the trade habits of 'old Europe' may have persisted longer than they did. The 'end of empire' - a peculiarly European problem - forced citizens to calibrate the way they lived. Immigrant labour, the repatriation of former colonialists, and, most significantly, a considerable reduction in the cheap trade of natural resources cramped the style of national elites in a way that Americans cannot claim as a common experience. At the other end of the income curve, unions - and the right to self-determination that tagged along as a welcome

by-product - fomented a regional identity that persists in the current economic life of European nations.¹⁵ In short, trade makes population relevant but that trade is subject to influence by regional habits and customs.

With a nod to the turn of phrase popularized by architect and city planner, Oscar Newman, the economics profession could be more respectful of the limited geographical region that is our “defensible space.” This view is underscored by Amy Glasmeier, the current head of the Urban Studies and Planning Department at MIT as well as Paul Krugman, the 2008 Nobel recipient for economics. To paraphrase Glasmeier, ‘regionalism embodies a sensitivity to institutional context and a cognizance of the importance of contingency’¹⁶ I believe my own admiration for Walter Isard’s regional models is amply validated by Paul Krugman’s recurrent interest in economic geography. In his 1956 debut, Isard posited that the cost of overcoming the friction of distance should be considered of equal importance to the commonly accepted factors of production; labour, resources and capital. Isard’s perspective embraces the neo-classical precept that market mechanisms stimulate economic activity. However, he used the component of distance to show a measurable drag on the equilibrium model, arguing that this ‘drag’ could be used to predict hierarchies within national economies. Edward Glaeser contends in his new book, *Triumph of the City*, ‘distance’ is less important than ‘proximity’. Essentially, this is a bit of semantic gamesmanship that seeks to stake out new intellectual territory by way of renaming. Glaeser argues that urban density change - easily measured from city to city - acts as a proxy for distance from the regional core under the assumption that greater densities indicate more important economic or political activity centers. Turning back to Isard for a moment, a presumption of this paper is that Isard’s ‘hierarchies’ are analogous to Glaeser’s urban agglomerations.

From medieval fortresses to rounding up the wagons, social groups once knew instinctively the limits of their ability to defend a perimeter. Capitalism, by virtue of its relentless efficiency, creates an illusion the fortress wall is an anachronism: we presume organization, technology and people will be best-served in an infinite space where frictions of distance, size and time - are minimized to the greatest extent.

A discussion of small cities implies that location matters. Though the problem of location - more specifically, regionalism - seems to be a red flag for many economists in the United States, it

¹⁵ A nice overview of the Marshall Plan is Greg Behrman’s *The Most Noble Adventure: The Marshall Plan and the Time When America Helped Save Europe*, Free Press, New York, 2007

¹⁶ See MIT press office interview with Amy Glasmeier <<http://sap.mit.edu/resources/portfolio/glasmeier/>>

remains - as pointedly observed by Krugman in his ongoing critique of the Eurozone¹⁷ - an undervalued foundation for selecting independent variables that can enhance a model for evaluating small city utility. The importance of location assumed here affirms the current reassessment of regionalism within the economic discipline that is common within the discipline in the European Union at academic institutions such as the Catholic University of Leuven in Belgium, The Kiel Institute for World Economy in Germany and West Flemish economics office (WES) in the city of Bruges.

The European Union is much like any significant territory; it can be best understood as the sum of its parts. The union is a major component of global economic activity and, current claims of crisis notwithstanding,¹⁸ it is no more (or less) likely to be dissolved than any other major currency guarantor. Global economic actors have invested heavily in the theatre of financial cooperation and it is simply facile for policy analysts to apply a 'big picture' framework to interpret the creation of the Eurozone and then assess its shortcomings according to a 'pixel-by-pixel' view. That said, it is imperative to note the union is a quite singular phenomenon and research of the European Union is attractive but perilous;

"The factor which has pushed researchers towards a European area based approach is the feeling that the EU is somehow different from the US and that this urges caution in applying existing evidence (usually North American) to understanding European issues. Many papers that are basically area studies portray themselves as tests of theories of New Economic Geography or location theory more generally (and) micro-geographic data may be used to compare spatial patterns in the US and the EU"¹⁹

Notwithstanding Combes valid assessment, the regionalist approach grounded in the thinking of Walter Isard is a fresh way to combat the problem of over-generalization within the economic study of the European Union. Recall that Simmons, mentioned earlier, wrote at a time when the verity of Keynesian policy analysis was being systematically discredited in English-language economic circles. Concurrently, Marxist economic policy, a verifiable failure in its adulterated implementation in the Soviet theater, was mutating into a nationalist hybrid in Latin America while Islamic fundamentalism was undermining similar Marxist-nationalist intellectuals in the Middle East and North Africa. Stepping back to observe the general trend, one can recognize the ghosts of

¹⁷ See <<http://krugman.blogs.nytimes.com/2012/02/23/euro-agonistes/>>

¹⁸ Castle, Steven; Economic Divisions in Euro Zone Are Seen as Threat, New York Times, B1, November 30, 2010

¹⁹ 20 Combes, Pierre-Philippe and Overman, Henry; The Spatial Distribution of Economic Activities in the European Union <ideas.repec.org/p/cep/cepdps/dp0587.html>

1978 in the spring of 2011. Privatization of the European social model continues apace, increased resistance to the common currency has galvanized to become a touchstone for both top and bottom economic producers, and a rightward shift, with its attendant anti-intellectual sentiment, has occurred in even the most progressive European nations.

The progress of the European Union presents problems unique to highly developed nations. For example, growth expectations in Europe are lower than in the United States. Consider what passes for optimistic growth news from EU economic and monetary affairs vice president Olli Rehn; “The European economy is clearly on a path of recovery (and) the rebound of domestic demand bodes well for the job market.”²⁰ This claim is made on growth forecasts of *four tenths of one percent*. In contrast, American financial analysts don’t crow about the numbers until they crack two percent.²¹ Or, consider the following observation; “{... Migration} flows are much larger in the United States than in Europe {...and} population flows in Europe respond much less to local labor market shocks.”²² Additionally, immigration, urban redevelopment and aging may have different impacts in Europe than in the United States or the United Kingdom.²³

Small city research pertaining specifically to the EU has had some significant attention from policy planners in the last decade. Of particular note is the European Observation Network for Territorial Development and Cohesion, or ESPON, which is financed in part by the European Regional Development Fund. In 2006, ESPON published an assessment of small and medium sized towns in with the EU. The goal of the report was to demonstrate the diversity and “bridge the traditional views regarding ‘SMESTOS’²⁴ across national boundaries.”²⁵ From the urban theory camp, a significant body of work relating to small cities in the United Kingdom has been produced by authors Bell and Jayne who have created an exhaustive bibliography of the extant literature. The University of Wisconsin at Stevens Point is a center of American activity for small city research and

²⁰ pg. B3, NYT, September 14, 2010

²¹ Goldman Sachs White Paper, July 2010

²² Glaeser and Gottlieb, p.990

²³ To illustrate, consider that, unlike the United States, many immigrants in Continental Europe view the French-Belgian littoral as the jumping off point for the first-choice destination; the English speaking United Kingdom. Urban areas throughout Europe are still beneficiaries of generous federal subsidies and many cities also qualify for historical, cultural and world heritage subsidies administered on the provincial, national and EU level. Aging in Europe is marked by an absence of the aggressive consumer marketing that American seniors experience.

²⁴ An unfortunate, but true, case of acronymania: small and medium sized towns.

²⁵ p.13, ESPON 1.4.1, 2006

a cursory look at the extended bibliography compiled for this paper verifies substantial literature from each separate European country about the small cities within their borders.

From an empirical perspective, small cities research offers advantages that may be overlooked by economists who focus on first tier cities. Contending there is a comparative ease of accessing documents and records at the small city level, Battaini, Maillat and Crevoisier find that, since city council governance allows “various urban actors to take the greatest responsibility within the development of the city,”²⁶ exogenous factors may be more easily accounted for when constructing a model. This is certainly not a given: many articles refer to the disproportionate impacts, such as creative capital, that can distort the model of a small community.²⁷

The study of small agglomerations²⁸ has significant intellectual precedent. In addition to Isard, William Alonso’s *Location and Land Use* is a highly regarded addition to bid-rent theory at the regional level. Though regrettably excluded from mainstream economics, Jane Jacobs’ impassioned critique of New York City’s Robert Moses defends community as a quality found within neighborhoods, not cities. William Whyte’s 1988 paean to New York City deconstructed the city into manageable parts as well. For Whyte, the corner of Water and Wall, Lexington and Fifty-seventh, Forty-second and Times, the Seagram’s ledge, and Union Square, remain the crucial component parts that sum to form a city of eight million. Sir Patrick Geddes viewed his era as a victim of myopic overspecialization. Omissions resulting from the focus on ‘big-picture’ cities like London or Lagos are by Wilson and Pickett, the authors of *The Spirit Level*, a convincing polemic that rejects unfettered markets and upholds the justifiability of a visible hand. “Urban research has overwhelmingly been pursued with reference to a very small number of big cities, so a limited and truncated conceptualization of urbanity has unfolded.”²⁹ Global city research creates a paradigm where “the ability of localities to undertake meaningful action in the face of globalization has been ... relatively restricted (to the) investigation of specific political, economic, social, cultural and spatial practices and processes”³⁰ that apply only to larger entities.

²⁶ p.52, Battaini, Maillat and Crevoisier

²⁷ p.312-26, Garcia, B.

²⁸ The development of a trend in cooperative relationships among small cities has been formalized in some regions within the European Union. A list of links for those regions that have established municipal cooperative arrangements can be found under the sub-regional heading in the appendix.

²⁹ Bell, David and Jayne, Mark; Small Cities? Toward a Research Agenda, *International Journal of Urban and Regional Research*, V.33, iss. 3, 2009

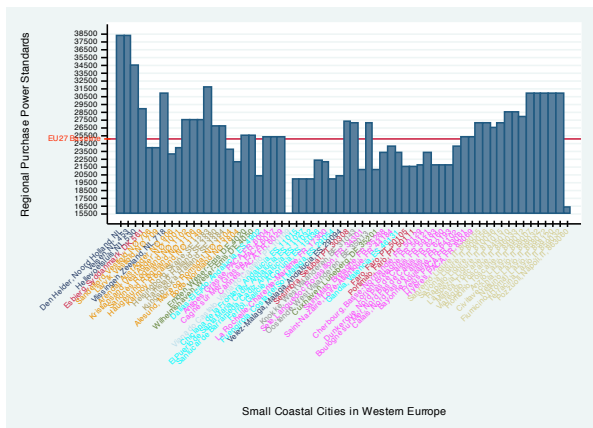
³⁰ 32 p.688, Bell and Jayne

There is no denying that the big trends observed by writers such as Edward Glaeser are true and will have relevant global impact: but, history is persistent. The city walls built in the Middle Ages and the guilds established within those walls represent the historical precedent for the restrictive urban planning and bureaucracies that continue to influence European life in ways that confound American models of growth. So, perhaps the eccentric Geddes was remarkably prescient when he wrote, “one may descant as he pleases about ‘our vast and increasing accumulations of wealth’ ... but to the direct eye of the social surveyor,...., this accumulation of wealth remains after all too much the same: a vision...of growing infinitudes of mean streets, mean houses, mean backyards, relieved more or less by bigger ones, too often even duller still.”³¹

³¹ p.xxvi, Geddes

Method, Data, Descriptive Analysis and Results

Ideally, a model captures elements common to an entire set.³² Noting the earlier observations made by Simmons and Maslow, the **change in housing prices**{*hpiE*}, **tertiary education** {*tertiary*} and, with some regret, a group of decidedly unsexy variables - the **distance from an metropolitan statistical agglomeration greater than 100,000**, the **population density**, the **territorial size**, the status of the city as a **college town** and whether or not it is a **provincial capital**³³ - have been plotted as independent variables to see whether they may be used as a reliable predictor of per capita **purchasing power standards** {*PPSNUTS2*} for the cities shown in the graph below.³⁴



³² CIA FactBook estimates 50.5% of the global population lives in an urban agglomeration. The annual projected growth rate of urbanization is 1.85%. <<https://www.cia.gov/library/publications/the-world-factbook/geos/xx.html>>

³³ Eurostat only provides regional macroeconomic economic indicators. Micro-indicators (the sexy stuff) must be purchased. From these sources, it is possible to define the regional core of any given area within Europe and so measure the its distance to the core of the coastal community addressed in this paper. Official definitions can be found at <http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Regions_of_Europe#Demographic_trends_across_regions_and_cities>

³⁴ There is significant academic precedent for this assumption. "The ideal measure of regional development in a study of this sort would be real income per capita (including income in kind) by geographic units which have maximum regional homogeneity." (p.10, Williamson)

The terms are defined in the following manner:

tertiary is the declared or estimated percentage of all residents, regardless of age, living within a community who have achieved a degree beyond secondary school.

hpiE is the percentage change in housing prices for stand alone homes, both newly constructed and those available on the secondary market, indexed to prices in 2010.

kntoCmetro is the distance, in kilometers, to the center of the economic and demographically dominant agglomeration circa 2009.

popdens is the population density of the community circa 2009.

geokmsq is the size of the community circa 2009 measured in km².

PPSNUTS2 is a regional measure of the cost of living indexed to the annual base of the EU-27 used by Eurostat. Regional PPS varies up to 20% from national PPS.

Purchase parity standards, graphically illustrated above using 2010 data for each of the towns and cities in this study, require explanation. The concept was first instituted throughout the European Union “to compare on a regular and timely basis the GDPs of the Member States of the European Union and the Member Countries of the Organization for Economic Cooperation and Development (OECD).”³⁵ As such, the standards make a handy tool to assess one city’s ‘health’ relative to others. The figures are simply price-levels subject to adjustment factors. In the United States, they are familiar in the Penn World Tables, except that the measurement used by Eurostat is conducted in Euros rather than dollars. The application of purchase power parity has been extended in the intervening decades as Eurostat and OECD programs have taken a greater interest in regional data so that now “the main task for the participating countries is to carry out price surveys for a regionally determined sample of consumer goods and services, and to provide the other input data required, notably expenditure weights, price data on non-market services and on investment goods.” Quoting further from Eurostat’s online press statement; “this requires highly harmonised methodologies and practices, and a substantial degree of overall coordination.”³⁶

The ‘basket’ is composed of ‘consumer goods and services, capital goods and services and government services’. In this respect there is scant difference in the data collected by the European

³⁵ Section 1.1, PPP Methodological Manual, OECD full text: <<http://www.oecd.org/dataoecd/59/53/37984314.pdf>>

³⁶ http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Purchasing_power_parities_as_example_of_international_statistical_cooperation

statistical authority (Eurostat) and what the United States relies on with its Consumer Price Index. Prices are “collected from a variety of outlets - corner shops, markets, supermarkets, specialist shops, departmental stores, service establishments, etc. - located in the capital city, {and} other cities and towns.... When averaged, these prices are considered to be national prices.”³⁷ The data varies slightly from its American counterpart to the extent that consumer goods and services are collected over a three year survey cycle. Food, drinks and tobacco are collected in year one. Year two takes account of home, garden, transport, restaurant and hotels and year three accounts prices of services, furniture and health.

The notable distinction of the Eurostat index of consumer prices (ICP) from its American counterpart is that housing construction, or housing ‘starts’, is buried in the ‘construction’ part of ‘capital goods and services’. I say ‘primarily’ because there are seven main aggregates of OECD final expenditure classification and ‘housing’, as the term is commonly used in America, can be bundled into ‘Collective consumption expenditure by government’ as well as ‘Gross fixed capital formation’.

Sales of single unit, stand-alone, housing are infrequently used as a measurement tool in the main indicators of Eurostat because of the extraordinarily high rates of renting residents in many European cities. The solution for statisticians has been to focus on the ICP while sidestepping the housing variance. As recently as July of 2011, Eurostat released the following statement:

*The exclusion of ... housing in the Harmonised Index of Consumer Prices is the major shortcoming in the coverage of this inflation indicator... Furthermore, as owner occupied housing represents a sizeable proportion of household expenditures, significant differences in households' housing expenditure amounts arise due to the fact that the balance between owner-occupied and rented housing vary considerably among the European Union Member States. From the outset, it has been considered unsatisfactory to exclude owner-occupied housing from the HICP since this may give a misleading picture of the inflationary pressures present in the economy. Hence, the exclusion of owner-occupied housing may impinge on the ability of the consumer price index to meet its primary objectives, which are, on the one hand, price convergence assessment in the EU and, on the other, the monitoring of price stability in the euro area.*³⁸

Indeed, the problem of figuring the ‘going rate’ for a house came up early in my research when confronted with the Belgian decomposition of housing price indices into seven different subgroups.

³⁷ Section 2.19, PPP Methodological Manual, OECD full text: <<http://www.oecd.org/dataoecd/59/54/37984956.pdf>>

³⁸ Technical Manual on Owner Occupied Housing for Harmonised Index of Consumer Prices, version 1.9.1 July 2011

The French statistical authority, INSEE, uses a simple percentage scheme where the first quarter of 2010 is established as the base (100) and existing home sales of previous eighteen years were measured relative to the base. This method works fairly well for comparing single family home purchases across countries that make such data available. To the best of my knowledge, Italy persists in using the ICP scheme and embeds housing price data into “abitazione, acqua, elettricità e combustibili” - a subcategory of a national twelve point consumer price index that has the effect of smoothing prices but makes it difficult to assess whether or not a speculation run occurred in the years prior to 2008.

While not ideal, the French percentage scheme does solve the problem of getting a rough estimate of home prices throughout the sixty three cities considered here. For example, it is not difficult to establish that the average price of a home in Knokke in 2010 was €332,758.³⁹ The Belgian registry gives raw numbers for over 20 years so it is simple to put together a long-term price progression for housing in Flanders. The problem is that this is not consistent with the French, the Spaniards or the Italians. The Germans use a measurement scheme that focusses on the price per square meter of living space and do not include home prices as part of its official statistical purview.⁴⁰ Norwegians started calculating price per square meter of “useful” floor space in 2001. There is no unified scheme that allows for the generalist to get a bearing on time series for home prices. This is a problem unto itself and attests to the difficulties of creating an EU standard that would rival the ease-of-use that American scholars have come to expect. The solution used in this paper was to follow the French model which has the advantage of showing relative value and allows the reader to extrapolate a rough estimate of price.

The OECD acknowledges the limitations inherent in PPP data derived from different national statistical authorities:

PPPs ... provide the best available estimate of the size of a country's economy, of the economic well-being of its residents and of its general price level in relation to the other countries in the comparison, they are, like all statistics, point estimates lying within a range of estimates – the “error margin” – that includes the true value. As with national accounts data generally, it is not possible to calculate precise error margins for PPPs or

³⁹ Belgian housing price information is readily available at http://statbel.fgov.be/nl/statistieken/cijfers/economie/bouw_industrie/vastgoed/gemiddelde_prijs_woonhuis/

⁴⁰ Real Estate Statistics for Germany are provided by the Real Estate Association of Germany: www.ivd.net

for the real final expenditure levels and comparative price levels derived from them.⁴¹

Looking forward to an expansion of the ideas developed in this paper and the desire to look at a larger, more global, set of small coastal cities, purchase power parity standards (PPS) are relatively easy to interpret across currencies, borders and cultures.

Further explanation is also required for 'tertiary education' as defined by the *International Standard Classification of Education* (ISCED) of the United Nations. This standard represents a harmonized scale for the assessment of international educational data. The American nomenclature for ISCED 5-6 includes everything from a vocational associate degree to a research level doctorate.⁴² The estimated ISCED 5-6 level within a community is what is used in this paper based on the premise that this level of education is a better proxy for 'creative capital' than patent filing.

Though a wide range of estimates in the data from small cities ought to be considered important, a commonly held presumption is that a college is a particularly significant amenity with considerable spill-over effects in the consumer goods and services segment of the economy. Some regions covered here have a higher concentration of cities with colleges and this may bias the estimates. In the case of Denmark, ISCED data is only available on the national level which, intuitively, will not accurately reflect the local situation. Moreover, all countries restrict ISCED data below the regional level. Where it was possible to do so, the method⁴³ used to estimate city level data showed only very small differences between the city level estimate and the regional data. In those cases where the estimate was significantly different than the data; the estimate was used. This is the case with Belgium, Germany and Denmark for all years. In Andalucia, the estimate and the data are significantly divergent in 1999 and so the estimate was used for that year and the regional data was applied to the subsequent years. In the case of France, local data was available for the years two thousand six to two thousand eight and that was used in favor of the Eurostat data. As observed in Spain during the nineteen eighties, there is often a difference between the state and Eurostat figures. The likely reason for this is that ISCED parameters may not be consistently applied as a best practice within state statistical departments.

⁴¹ Section 1.37, *ibid.*

⁴² 45 USA_ISCED Mapping Database, <http://www.uis.unesco.org/Education/ISCEDMappings/Pages/default.aspx>, extracted 2/16/2012

⁴³ $(\text{locpop}/\text{regpop})(\text{tertiaryraw}) = \text{local raw tert.}; (\text{locrawtert}/\text{locpop}) = \% \text{est. loc pop ISCED 5-6}$. In the case of local population data, the regional data was applied.

With these variable more fully explained, the function estimated is:

$$\text{PPSNUTS2} = \alpha\text{hpiE} + \beta\text{tertiary} + \zeta_1\text{popdens} + \zeta_2\text{geokmsq} + \zeta_3\text{kmttoCmetro} + \zeta_4\text{ctown} + \zeta_5\text{provcap} + \beta^0 + \epsilon.$$

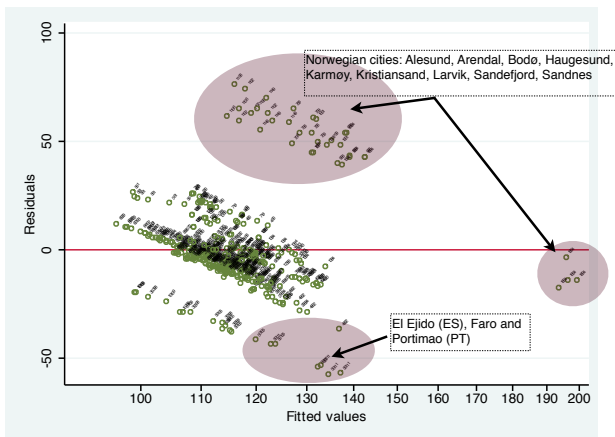
Which delivers the following results:

Source	SS	df	MS	Number of obs = 355		
Model	52947.9785	7	7563.99692	F(7, 347) =	15.46	
Residual	169805.441	347	489.352857	Prob > F =	0.0000	
Total	222753.42	354	629.246948	R-squared =	0.2377	
				Adj R-squared =	0.2223	
				Root MSE =	22.121	

PPSNUTS2_	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
tertiary	-1.252378	.6211388	-2.02	0.045	-2.474049	-.0307073
hpiE	-.2441025	.0725741	-3.36	0.001	-.386843	-.101362
kmttoCmetro	.105288	.0156385	6.73	0.000	.0745299	.1360461
ctown	-8.303431	2.641918	-3.14	0.002	-13.49962	-3.107242
provcap	-6.946991	3.401259	-2.04	0.042	-13.63667	-.2573118
geokmsq	.0062901	.0055958	1.12	0.262	-.0047158	.0172959
popdens	-.0003937	.0008951	-0.44	0.660	-.0021543	.0013668
_cons	139.4582	6.932433	20.12	0.000	125.8234	153.0931

In all the years where the data is rich (1998-2009), intuitive notions such as the importance of housing, education and location and their bearing on a citizens's purchasing power is evident, albeit inversely.⁴⁴ This initial regression produced the unexpected result that a community's status as a college town or provincial seat is negatively correlated to its purchase power standard. Closer scrutiny shows the p-value on *provcap* to be close to the five percent level. Still, the coefficient is large and that makes for a dramatic sideshow. The *ctown* has similar charms but with a p-value that puts it well within the high segment of the t-test. This will be more fully addressed below. The only coefficient showing a positive correlation of an independent variable to PPSNUTS2 is *kmttoCmetro* which suggests there may be a bid-rent story to tell which will be done further on. The physical size {*geokmsq*} and the population density {*popdens*} are statistically irrelevant. Concerns of collinearity of the physical size and population density were addressed with a variance inflation factor test. The tolerances were in the 0.6 to 0.9 range; well above the 0.1 'threshold of concern'.

⁴⁴ Regression analysis basic: http://resources.esri.com/help/9.3/arcgisdesktop/com/gp_toolref/spatial_statistics_toolbox/regression_analysis_basics.htm



Graphically, the regression shows outliers that reflect the national borders of the EU. The red zones on the top and the right of the graph above is Norway. Portimao, Portugal, is in the red zone on the bottom. El Ejido, an Andalusian industrial agriculture community inland from the coast is caught on the edge of the lower red zone. The dimension of time may be unclear. To address this concern, the regressions were also performed on a logarithmic scale. The results were not dramatically different from the ordinary least squares regression above. To illustrate, the logarithmic regression results and the corresponding graphs for those countries sharing the Euro currency are appended (pp. 66-72).

After compiling the data, working with ordinary least squares regressions and finding that my initial notions of what makes for a 'healthy' city were wrong, I had concerns that my outliers were causing problems. My solution was to use a robust regression which would allow me to create a much stronger visual story about how education and housing might impact the community {see chart on page 22}.

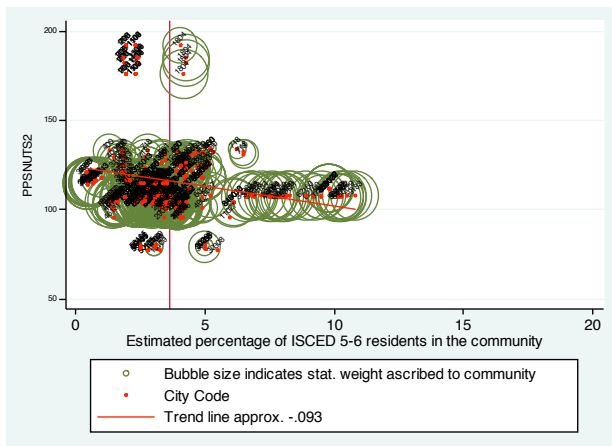
Robust regression		obs = 355 Mean Square Model/Mean Square Residual = $F(7, 347) = 71.00$ $\phi > F = 0.0000$				
PPSNUTS2_	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
tertiary	-.0926542	.2139553	-0.43	0.665	[-.5134666⇒.3281581]	
hpiE	-.196228	.0249986	-7.85	0.000	[-.2453959⇒-.1470601]	
ctown	-.5219245	.9100258	-0.57	0.567	[-2.311785⇒1.267936]	
provcap	-2.993156	1.171586	-2.55	0.011	[-5.297459⇒-.6888535]	
kmtoCmetro	.0749933	.0053868	13.92	0.000	[.0643984⇒.0855881]	
geokmsq	.0127579	.0019275	6.62	0.000	[.0089668⇒.0165489]	
popdens	.0002677	.0003083	0.87	0.386	[-.0003387⇒.0008742]	
β^0	121.3192	2.387921	50.81	0.000	[116.6226⇒126.0158]	

The results of the weighted regression substantially weakened the link between education and purchasing power. What initially seemed like an interesting story about how an educational institution might provide city administration with some leeway in its delivery of amenities - based on the premise that academics presumably tolerate lower purchase power standards in exchange for the amenities of a college town - dissolved into the probability range for a null hypothesis. As one would expect given this change, empirical evidence from the ordinary least squares regression linking college towns and provincial capitals to lower purchase power standards lost its credibility as well.

The premise that housing prices have a bearing on purchase power standards was virtually unchanged. That is to say, what was a modest determinant of the independent variable to begin with was not substantially altered, though the probability that the quotient of the coefficient and the standard error was in the upper bound of the Student's distribution improved.

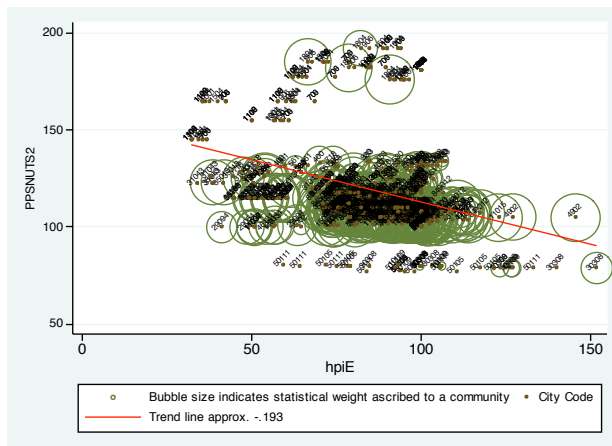
The graph on the following page illustrates the slight negative relationship between a high level of education and the regional purchase power standard found in the community. It is worth noting that even though Norway sits at a point almost double the horizontal EU-27 PPS reference line, the percentage of highly educated residents is on the low side of the EU mean of 3.66%. At the other extreme, the Portuguese cities of Faro, Viano do Castelo and Sesimbra hew close to the EU mean. The leading edge cities to the right are interesting. Dunkerque (Dunkirk), Bayonne, Boulogne-sur-Mer are often maligned because of disproportionate migrant populations. Anecdotally, these populations are perceived to be undereducated. Yet, here is clear evidence of above average

educational achievement in cities that are more frequently cited for their disamenities than their charms. This pattern is observed closer in to the center of the data as well; Cagne-sur- Mer and El Ejido are on the right edge of the core. It is interesting to find Den Helder, Vlissingen and Oostende on the left of the educational mean but above the EU-27 mean. Such a position could be interpreted to signify that money is available for education but not forthcoming. The core is dense with the cities not observed at the extremes which one can take to signify a reinforcement of the weakly negative coefficient generated by a robust regression.



The next graph illustrates the relationship of the housing price index to regional purchase power. Again, the upper bound of the graph is full of Norwegian points and the lower bound captures the Portuguese towns. What is of interest at the extremes is that Norway's coastal communities of less than a hundred thousand never experienced the catastrophic price escalation of housing that pummeled the United States. Its HPI shows a steady progression to the base year 2010. As noted earlier, Norway's housing price index is oddly defined according to 'utilized square meters' and this may cause some unreliability in terms of having accurate nominal home prices. At the lower bound, Sesimbra experienced extraordinary price escalation which is in line with its status as a vacation satellite only an hour from Lisbon. El Ejido - the industrial agriculture town in Anadalucia - experienced extreme escalation as well. The nearby coast of Almeria averages the most hours of

sunshine per year in Europe and it is only ten kilometers from the town center. Though climate has been shown to have a negligible effect on consumer preference,⁴⁵ low housing prices in a region with low PPP combined with favorable climate may be attractive to second home owners. Closer in, the varied character of communities persists. Chiclana and Cannes are clearly vacation hotspots and Piombino is a contender but above average prices were also observed in the Dutch towns of Den Helder and Vlissingen. To the south, Boulogne-sur-Mer appears once more to the right of the mean. The Danish town of Esbjerg, also stands out from the pack with a modest price run above the mean.



Noting the consistent link of amenities and higher-than-expected housing prices, the suggestion was made to take another look at the bid-rent story promulgated by William Alonso. Using the robust regression on the following page, I found the coefficient on *kmtocmetro* to be modest. Also, the city of Bødø distorts the confidence interval. Nonetheless, the Student's t-statistic is strong, suggesting higher PPP is evident in towns proximate to a large metropolitan area. The heavy mass at the left side of the graph represents every town except for the Norwegian communities along to upper boundary and the Portuguese communities along the bottom. The vertical reference line is

⁴⁵ Getz, p.457

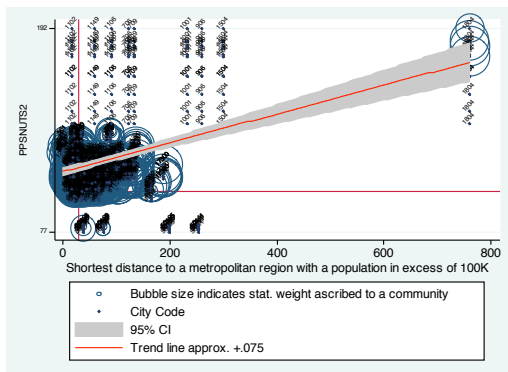
biased outward because of the remoteness of Bødø. The density is heaviest above the EU-27 mean and to the left of the ninety kilometer mean and one can make out the general contour of a negative slope as the horizontal axis extends out.

Robust regression

Number of obs = 568
 F(3, 564) = 185.91
 Prob > F = 0.0000

PPSNUTS2_	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
kmtoMetro	.060217	.0049112	12.26	0.000	.0505705	.0698635
geokmsq	.0108789	.0020081	5.42	0.000	.0069347	.0148232
hpiE	-.3142638	.0242553	-12.96	0.000	-.3619054	-.2666221
_cons	133.2734	2.182876	61.05	0.000	128.9859	137.561

William Alonso's premise that the outer edges of a city are preferable to the wealthy by virtue of its promise of more space is hard to verify or deny with the information at hand. First, set density is greatest at roughly the thirty kilometer mark. However, that is beyond the Western European average commute time of twenty-three minutes. Even assuming a driver could travel the entire commute at 50kmph, the distance covered is only just under 20km. Distance is different in Europe. Anecdotaly, Europeans would be reluctant to travel sixty kilometers five days a week. Empirically, the actively employed population of the EU27 logs only 30km for the total, round-trip, commute.⁴⁶



⁴⁶ Source: <<http://www.worldmapper.org/display.php?selected=141>>

Conclusion

This thesis proposes that a community's purchase power is determinable by two economically quantifiable, desirable, conditions in combination with geographic and administrative factors that tend to be stable over an extended period. The evidence gathered from small cities along the Continental littoral shows that prediction of this sort can, at best, only account for just over twenty percent of the total relationship. Subject to a robust regression, this estimate of predictive power is cut by over two thirds. Regressing on all the data without distinguishing between regionally or, presumably, demographically different populations, yields results that promise fruitful continued research if combined with access to micro-data. Negative coefficients on the *provcap* and *ctown* binaries discussed in the section on OLS regression may yet prove to have validity when tested in relation to city expenditures and local amenities such as festivals and other public events. At this stage, it is clear the presence of the highly educated and a robust trade in single family homes is important to the 'health' and 'well-being' of a community.

The inferred meaning of the evidence is less clear cut: should purchase power standards - only readily available at the NUTS2 level - be a complete proxy for a reliable 'quality of life' or 'wellness' assessment? The answer is a qualified yes. In the absence of excellent, long term, data such as the kind developed in (and about) America since 1839, European Union scholars continue to have a tough time building cohesive policy positions able to speak authoritatively to a European '*homo oeconomicus*'. This is not to suggest there is anything lacking within the statistical bureaux of Europe's individual nations; statistical information on the national level is on par - and often better than - the data found in the United States. But, as acknowledged by Eurostat, leading intellectuals and students in the field, integration of data is the problem: and that presents a problem for the dream of unification.

In the 1980's, Jeffrey Williamson returned to the 'North-South problem'. Struck by the tenaciousness of economic disparity and global divergence among developed and developing nations, Williamson repeated his comments of two decades earlier almost verbatim; "a consistent relationship between ... regional income disparities and increasing North-South dualism {is} typical of early development stages, and regional convergence and a disappearance of ... North-South problems {are evident} within the more mature stages of national growth."⁴⁷ Living, as we do, in a time of economic volatility, this north-south analogy is easily re-imagined as a 'have-have not' dichotomy even in a mature economy. It behooves us to seek out equitable solutions that uphold

⁴⁷ Williamson, p.44

dignity for those unable to access the 'efficient economic systems' characterized by high purchase power standards, the attendant economies of scale and consequent comparative advantage.

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Table of Appendices

I. Internet Resources

II. Population growth charts and city hospital geospatial information

III. Alternative graphic illustration of data including national charts of change over time.

Appendix of internet resources

International:

<http://www.ats.ucla.edu/stat/stata/> - Stata help

<http://boulter.com/gps/> - a GPS Coordinate Converter that can be used to check the accuracy of Maps and coordinate information

http://www.coe.int/t/dg4/cultureheritage/culture/Cities/Default_en.asp - English language website for the Council of Europe Intercultural Cities initiative

<http://www.comedia.org.uk/> - the website of the activist city planners Charles Landry and Phil Wood

<http://data.un.org/Default.aspx> - United Nations Educational, Scientific and Cultural Organization (UNESCO) data

http://demo.istat.it/pop2002/index_e.html - link for ISTAT population information 2002

<http://www.eea.europa.eu/> - The European Environmental Agency website

http://epp.eurostat.ec.europa.eu/portalpage/portalnational_accounts/data/main_tables - Eurostat GDP and PPP databases

<http://www.euklems.net/> - This EU database measures economic growth, productivity, employment creation, capital formation and technological change at the industry level for all European Union member states from 1980 to 2004. Owing to the general consensus that the Lisbon Agenda was a failure, the project was abandoned in 2008.

<http://www.euroeducation.net/> - a commercial educational institution aggregator with clear descriptions of national educational terms, standards and procedures.

<http://epp.eurostat.ec.europa.eu/portalpage/portaleurostat/home/> - The Statistical Authority of the European Union

http://epp.eurostat.ec.europa.eu/portalpage/portalgiscopopups/maps/regional_yearbooks/ry_2004 - link to regional maps provided by EUROSTAT

<http://www.oecd.org/> - Organisation for Economic Cooperation and Development

<http://philwood.eu/> - Phil Wood, author and activist, is an advisor for the Council of Europe Intercultural Cities Program

<http://www.statoids.com> - A website developed by Gwillim Law, a statistician based in the United States (useful for International Postal Codes).

<http://www.urbanaudit.org/> - the official website of the European Union Urban Audit Survey conducted in 2003 and 2007

<http://universimedia.pagesperso-orange.fr/geoloc.htm> - a site with a simple to use GPS tool developed by Bernard Vatant of Mondeca, 3 cité Nollez, 75018 Paris

<http://www.worldportsource.com> - extensive physical descriptions of port facilities around the globe.

National:

Belgium

<http://www.onderzoeksbalans.be/onderzoeksbalans/houwkundig/inventarisatie/historiek> - website of the Flemish Institute for Real Estate Legacy
<http://statbel.fgov.be/> - Belgian Statistical Authority
<http://www.vub.ac.be/SOC0demoresearch.htm#databanks> - Brussels Free University Department of Social Research database (in english)

Denmark

<http://www.dst.dk/> - Danish Statistical Authority

France

<http://www.annuaire-mairie.fr/contact.html> - commercial website for city wide current data
<http://www.cartesfrance.fr/> - website for regional maps from France
<http://www.cgedd.developpement-durable.gouv.fr/home-prices-in-france-1200-2011-r137.html> - General Counsel of Durable and Environmental Development used for the Housing Price Index of France
http://citeres.univ-tours.fr/compo.php?niveau=umr&page=menu_actu - Academic society based at the University of Tours dedicated to the interdisciplinary research of cities, territories, environments, environments, and societies
<http://www.education.gouv.fr> - the website for the French Ministry of Education
http://www.gecodia.fr/Economie-Regions_r35.html - a commercial resource for regional data
<http://www.insee.fr/fr/default.asp> - French National Institute for Statistics and Economic Studies
<http://www.legifrance.org/home.jsp> - Official governmental website for the diffusion of the French legal code
http://media.education.gouv.fr/file/2008/69/1/chap4-2_33691.pdf - Number of students of secondary schools in September 2007

Germany

http://www.destatis.de/jetspeed/portals/cms/Sites/destatis/Internet/EN/Navigation/Homepage_NT.psmml - Statistical Organization for Federal Germany

Italy

<http://archivio.pubblica.istruzione.it/mpi/publicazioni/2007/index07.shtml> - Educational Archives
<http://www.istat.it/> - Italian Statistical Authority
<http://www.istruzione.it/web/hub/home> - Italian Ministry of Education
http://www.nomisma.it/index.php?id=17&no_cache=1&L=1 - Bologna based private economic research firm, Co-authors of the ESPON report.
<http://statistica.miur.it> - Italian Ministry of Education Statistical Database
<http://statistica.miur.it/scripts/Studenti/Studentenei.idx> - database for university statistics in Italy prior to 2000

Netherlands

<http://www.cbs.nlnl-NLmenu/home/default.htm> - Central Bureau for Statistics, The Netherlands
<http://www.kadaster.nl> - Kadaster Press Release May 2007 is the base date used for computing HPI for the provinces of North Holland, South Holland and Zeeland
<http://www.leegelandarchieven.nl/> - a search engine for geographic, topographic, engineering and infrastructure archival material.
http://nl.wikipedia.org/wiki/Lijst_van_hogeronderwijsinstellingen_in_Nederland - full listing of Universities and Colleges in the Netherlands

Norway

<http://www.ssb.no/english/municipalities/1804> - Norwegian Statistical Authority

Portugal

<http://www.grupolusofona.pt/> - The Lusophone Group is a Portuguese language federation comprised of eleven tertiary education institutions in Portugal, six universities in other Portuguese-speaking countries, and fourteen schools in Portugal and Brazil. The group's main objective is the promotion of science, culture and economic development in all countries where Portuguese is the dominant language. Currently, the Group provides training and education to more than 25,000 students.
http://www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_main&xlang=en - National Statistical Institute, Portugal

Spain

<http://portal.guiasalud.es/web/guest/quienes-somos> - The national health services internet clearinghouse for Evidence Based Research, Standardization of Methodology and Clinical Practices founded in 2002 and directed by a board that represents a cross-section of stakeholders (patients, policy makers, medical professionals).
<http://www.ine.es/> - National Statistical Office

<http://www.mspss.es> - National Ministry of Health Services

<http://www.tinsa.es/en/> - A Spanish housing valuation company with an international reach throughout the Hispanosphere

Sweden

http://sv.wikipedia.org/wiki/Universitet_i_Sverige - University list for Sweden

<http://www.scb.se/> - Swedish Statistical Authority

United States

<http://www.hifa.gov/Default.aspx?Page=87> - Downloadable data from the Federal Housing Finance Agency of the United States

Regional:

Andalucia

<http://www.uca.es/en/our-university/the-campuses> - University of Cadiz, serving the communities of El Puerto de Santa Maria, Sanlucar de Barrameda, and Chiclana de la Frontera
<http://www.uma.es/contenido.php?idm=207&f=43> - University of Malaga, serving the communities of El-Ejido, Velez-Malaga

Flanders

<http://www.kennisplatformeconomie.be> - Site for WES, Bruges; the regional economic consulting authority for private and public enterprise in Flanders and abroad.
<http://www4.vlaanderen.be/dar/svr/Cijfers/Pages/Excel.aspx> - Flanders Regional Statistical Authority
http://www.vliz.be/NLOver_het_VLIZ/Over_het_VLIZ_intro - Flemish Oceanic Institute
<http://www.west-vlaanderen.be/Pages/Startpagina.aspx> - website for the regional governmental authority of West Flanders

Galacia

<http://www.udc.es/index.html?language=en> - University of Coruna

Languedoc-Rousillon

<http://www.laregion.fr/> - Regional statistics and official administrative information for Languedoc-Rousillon
<http://www.pres-univ-montp.fr/universite/historique.php> - The University of Montpellier has a large chemistry department located within the community of Sete.

Lower Saxony

<http://nbank.de> - NBank is the federal-state bank for investment and business development in Niedersachsen. NBank advises local business on EU programmes and programmes with federal and regional partners.
<http://www.nls.niedersachsen.de/> - Regional Statistical Databank for Lower Saxony
<http://www.ostfriesland-tourism.com/culture/living-in-ostfriesland.html> - Site for the tourist board of East Friesland, an area of Lower Saxony that includes the independent municipality of Wilhelmshaven.

North Holland

http://www.vivazorggroep.nhome.aspx?menu_id=5&page_id=31 - a private, HMO - health continuum care provider serving the community of Velsen

PACA

<http://formation.univ-tln.fr/> - University of Toulon-Var serves the community of Hyeres
<http://maritime.var.cci.fr/en> - the Var department Chamber of Commerce
<http://www.paca.pref.gouv.fr/Plan-du-site> - Official site for the administration and statistical authority of the French region "PACA" (Provence-Alpes-Cote d'Azur) which encompasses the coastal cities of Antibes, Cagne sur Mer, Cannes, Frejus and Hyeres.
<http://www.sdtcfp-paca.travail.gouv.fr/directe/index.htm> -Regional website for PACA (Provence-Alpes-Cote d'Azur), France
<http://umice.fr/universite> - University of Nice; serving the community of Cannes with a polytechnical college.

Nord-Norge

<http://www.samiskhs.no/index.php?c=216&kat=International> - Sámi College is a 150 student institute serving Norse, Swedish, Finnish and Russian pupils. Established in 1989 as a result of the Sámi people demand for higher education and research, the Sámi language is the main language and most of the instruction is conducted in the Sámi language.

Nord Pas-de-Calais

<http://infoeco.cotedopale.cci.fr> - Chamber of Commerce site for the coastal areas of Nord and Pas de Calais.
<http://www.nordpasdecalais.cci.fr/Contenus/Economie-regionale> - regional economic figures for NPdC
<http://www.univ-littoral.fr/home.htm> - The University of the Opal Coast. Founded in 1991, the University of Littoral Côte d'Opale (ULCO) is located in four coastal towns within the Pas-de-Calais: Boulogne-sur-Mer (Biological Engineering), Calais, Dunkerque and St Omer. The facility provides training to nearly 10,000 students in the areas of Arts and Letters, Languages, Law, Economics and Management, Humanities and Social Sciences, Sports, Science and Technology.

Østlandet

<http://www.hiof.no> - Østfold University is a 4,500 student institution offering study in two regional cities - Halden and Fredrikstad.
<http://www.uio.no/english/about/facts/> - The University of Oslo. Norway's largest university serving over 27,000 students.

South Holland

<http://www.careyn.nl/index.php/over-careyn.html> - a private, palliative and senior health continuum care provider serving the community of Hellevoetsluis among others

Vestlandet

<http://www.hivc.no> - Vestfold University is a 4500 student institution offering health services, education and management, maritime, technical, financial and administrative studies at both the bachelor's and master's levels.

Sub-Regional:

Agglomeration Biarritz-Bayonne-Anglet

<http://www.agglcocotebasque.fr/> -

Agglomeration Calaisis

http://www.agglo-calaisis.fr/fr/presentation/le_territoire - the urban administrative and cooperative area encompassing the cities of Calais, Coquelles, Coulogne, Marck and Sangatte

Agglomeration Frejus-Saint Raphael

<http://www.agglo-frejus-saintraphael.fr/> -

Agglomération de Sophia Antipolis

<http://www.agglo-sophia-antipolis.fr/SitePages/Accueil.aspx> - An agglomeration of 16 communities with Antibes acting as the seat.

Agglomeration Stavanger-Sandnes

<http://www.regionstavanger.com/no/Media/> - Norway's 50 largest urban areas show that urban settlement patterns have been undergoing profound changes. Old and traditional towns have been eclipsed by new municipalities exhibiting "turbocharged" growth. As Norwegians leave traditional cities, police stations, post offices, major airports, hospitals and county administration experience drastic changes in demand for service. New towns - often still called 'the village' - must scramble to ramp up municipal services and offices. The Stavanger-Sandnes agglomeration is Norway's third largest contiguous urban area with over a quarter million residents distributed over 467.5 square kilometers. Sandnes is the country's fastest growing city.

Ålesund

<http://www.hjals.no> - Ålesund College is a 2000 students University College offering study programmes in business management, engineering, health care, fisheries and maritime trade.

Arendal:

<http://www.unep.org/climateutral/Default.aspx?tabid=204> - Arendal, Norway, is the host city for the the United Nations Environmental Program Global Resource Information Database {UNEP/GRID - <http://www.grida.no/>}

Bayonne:

<http://www.euskara.bayonne.fr/> - the official City of Bayonne website for the preservation of the Basque language
http://www.insee.fr/fr/insee_regions/aquitaine/themes/dossiers/zonages_2004/jad5108.pdf - Report of the Aquitaine Region of France with detailed information on the city of Bayonne, 2004
<http://www.iutbayonne.univ-pau.fr/> - University of Pau/Bayonne Campus offers education management positions in technical and vocational sectors of production, research applied and services.

Cagnes-sur-Mer

http://www.univ-mer.com/index.php?p=rubrique&r=presentation_generale_universite - the polytechnical International University of the Sea

Communauté urbaine de Cherbourg

http://www.cuc-cherbourg.fr/Pages/presentation/cuc_bref/historique.htm - Agglomerative expansion is hardly new to the French. As early as 1886, Local officials of the city of Cherbourg considered an extension of the city to find land and twenty years later a similar expansion of the ocean territory is proposed. An intercommunity workers' union was established in the nineteen-sixties which likely simplified the effort to develop an regional industrial area near the village of Querqueville. By 1970, the Urban Community of Cherbourg was a fact.

<http://iutcherbourgmanche.unicaen.fr/> - polytechnical university of Cherbourg, administrated by the University of Caen and Lower Normandy

DenHelder:

<http://www.defensie.nhlda/> - The Defense Academy (NLDA) is the Dutch military academy offering general officer training for all levels from initial officer training to the executive level. The NLDA comprises the following seven institutions: Royal Naval Institute, Royal Military Academy, Defence College Institute, Faculty of Military Science, Top Management Course Defense, Dutch Institute for Military History, Human Resource Management Academy.

<http://www.stichtingstellingdenhelder.nl/> - is a portal for information about the bunker ruins surrounding this historical naval port city.

Dunkerque:

<http://www.fracnpdc.fr/INFO.html> - The regional art museum of the Cote d'Opal (Griet Dupont is member of the Advisory Board).

Emden:

http://www.gll.niedersachsen.de/portallive.php?navigation_id=10755&article_id=50477&psmand=34 - State Agency for Geoinformation and Land Development Niedersachsen (LGLN)

http://www.ofd.niedersachsen.de/portallive.php?navigation_id=17533&article_id=67581&psmand=110 - The Regional Tax Office (OFD) of Lower Saxony.

Esbjerg:

<http://www.sdu.dk/> - University of Southern Denmark, Esbjerg campus

Faro

http://www.uaalg.pt/index.php?option=com_content&task=view&id=12507&Itemid=90&lang=en - The University of Algarve is a state university established in 1979 serving 10,000 students with seven academic colleges: the School of Education and Communication; the School of Management, Hospitality and Tourism; the Engineering Institute, and Faculty for Economics; Human and Social Sciences and Science and Technology. Additionally, the [Faro School of Health](#) provides research facilities offering training in health science.

<http://www.inuaf-studia.pt/> - Instituto Superior D. Afonso III (INUAF)

<http://www.ismat.pt/> - Instituto Superior Manuel Teixeira Gomes (ISMAT)

<http://www.ipiaget.org/silves/> - The Silves campus of the Jean Piaget School of Health Sciences was established in 2002 to respond to the shortage of health workers in Portugal and, in particular, the Algarve region.

Ferrol:

<http://lucas.cdf.udc.es/> - Naval engineering and polytechnical departments of the University of Coruna.

Gandia:

<http://www.upv.es/entidades/EPSPG/indexc.html> - Polytechnical University of Valencia, Gandia Campus

Halmstad

http://www.hh.se/english/5_en.html - Halmstad University is an independent University founded in 1973 serving 15,000 students with fifty degree programs and extensive cooperative ventures involving the business and public sectors.

Haugesund

<http://www.hsh.no/english.htm> - Haugesund University is a 3000 student institution established in 1994 when four independent colleges in communities of Stord and Haugesund merged.

La Rochelle

<http://www.univ-larochelle.fr/> - a 7,500 student institution comprised of three training and research departments⁴⁸: a Faculty of Law, Science Policy and Management, the Faculty of Science and Engineering and the Faculty of Arts, Languages, Arts and Humanities. Additionally there is also one polytechnical college, an IUT, within the campus.

Lorient:

<http://www.univ-ubs.fr/> - University of Southern Brittany serves the community of Lorient with a polytechnical university established in 1975

⁴⁸ known as a UFR is a type of component of a university established by law Savary in 1984. It combines training departments and research laboratories. "They represent an educational and research program implemented by teachers, researchers, teachers and researchers belonging to one or more core subjects. " -

La métropole Nice Côte d'Azur

<http://www.nicecotedazur.org/> - Located in the Provence-Alpes-Côte d'Azur, **La métropole Nice Côte d'Azur** was established on December 31, 2011, encompassing 46 municipalities, 545,000 inhabitants and representing the most recent evidence of a European shift in favor of regional polity. The impetus for creating a metropolis around Nice is a result of a law passed in 2010 allowing local governments to form more integrated municipalities. Over 95% of the electorate voted on the referendum for the creation of the municipality, with 87% favoring incorporation. The shift to regional agglomeration engenders economies of scale for metropolitan Nice in the form economic development, waste management, transport, housing, water supply management and security, infrastructure, as well as the management of ports tourism, urban planning, and information systems.⁴⁹

Oostende:

http://archiefbank.oostende.be/file_uploads/18040.pdf - Annual Report for the City of Oostende, 1951, see pp.127-145 for annual report on population and financials
http://archiefbank.oostende.be/file_uploads/18050.pdf - Annual Report for the City of Oostende, 1961, see pp.1791 for passing reference to population
http://archiefbank.oostende.be/file_uploads/18057.pdf - Annual Report for the City of Oostende, 1968, see p.60 for reference to population
http://archiefbank.oostende.be/file_uploads/18061.pdf - Annual Report for the City of Oostende, 1972, see p.918 for reference to population in 1971
http://archiefbank.oostende.be/file_uploads/18065.pdf - Annual Report for the City of Oostende, 1976, see p.140 for reference to population in 1975
http://archiefbank.oostende.be/file_uploads/18070.pdf - Annual Report for the City of Oostende, 1981, see p.103 for reference to population in 1981
http://archiefbank.oostende.be/file_uploads/18078.pdf - Annual Report for the City of Oostende, 1989, see p.2454 for reference to population in 1988
<http://www.ond.vlaanderen.be/onderwijsstatistiek/20092010.htm> - 2009 figures for total high school diplomas in Arrondissement Oostende, p. 33, Statistical Yearbook 2009-2010 of the Flemish Education Authority

Quimper

<http://www.quimper.cci.fr/frames.asp?accueil.asp%3F> - Chamber of Commerce for Quimper

Saint-Malo

<http://www.iutsm.univ-rennes1.fr/> - the University of Rennes operates a polytechnical satellite campus in Saint Malo.

Saint-Nazaire

http://www.univ-nantes.fr/index_flash.jsp - the University of Nantes serves the community of St. Nazaire with a large polytechnical satellite campus specializing in oceanographic research, logistics electronics and engineering

San remo

<http://lavoro.provincia.imperia.it/site/11019/default.aspx> - regional board of labor for the province of Imperia

Sete

<http://www.espace-brassens.fr/francais/index.html> - Georges Brassens official website
<http://www.iutsete.univ-montp2.fr/> - the chemistry department of the University of Montpellier

Viana do Castelo

http://portal.ipv.pt/porta/page/portaipv/ipv_historia - The Polytechnic Institute of Viana do Castelo [IPVC] was founded on the grounds of restored estate in 1980 and offers training in education, agriculture and a School of Technology and Management.
<http://www.esg.pt/> - The School Gallaeia is managed by the Foundation for the Protection and Rehabilitation of Architectural Heritage since 1995 and is charged with the education, training and protection of landscape and architectural heritage.

Vlissingen

<http://hz.nhlPages/Homepage.aspx> - Zeeland Province College of Applied Science

⁴⁹ Navas, Christiane; Nice Côte d'Azur devient la première métropole en France, Les Echos, 2/01/2012 full text: <http://www.lesechos.fr/economie-politique/france/actu/0201817514590-nice-cote-d-azur-devient-la-premiere-metropole-en-france-269718.php> (extracted 3/01/2012)

IV. Population growth charts and city hospital geospatial information

Norway

N1504 Alesund, Møre og Romsdal, Vestlandet, Norway, 42982, [http:// www.alesund.kommune.no](http://www.alesund.kommune.no)

lat:62.46423 lon:6.31424 Helse Sunnmøre - Ålesund sykehus Åschaugen 5, 6017- helse-sunnmore.no
Popular tourist site due to fjords, mountains and uniform art nouveau architecture due to catastrophic citywide fire in 1904.
Popular attractions include a large aquarium

N0906 Arendal, Aust-Agder, Sørlandet, Norway, 41655, <http://www.arendal.kommune.no>Om- kommunen/Aktuell-statistikk/

lat:58.46685 lon:8.75422 Sørlandet sykehus HF Arendal! Sykehusveien 1

N1804 Bodø, Nordland, Nord-Norge, Norway, 46049, <http://www.bodo.kommune.no>

lat:67.28342 lon:14.39729 Nss 659 sykehuset Oddbjørn Djupdal Prinsens gate 164
Popular tourist destination for its famous maelstrom and northern lights. Aggressive promotional campaign funded by city.
University town

N1106 Haugesund, Rogaland, Vestlandet, Norway, 43183, <http://www.haugesund.kommune.no>

lat:59.40889 lon:5.27938 Helse Fonna HF1, Karmsundgata 120. <helse-fonna.no>!

N1149 Karmøy, Rogaland, Vestlandet, Norway, 39624, <http://www.ssb.no/english/municipalities/> 1149

no hospital

N1001 Kristiansand, Vest-Agder, Sørlandet, Norway, 81295, [http://www.ssb.no/english/ municipalities/1001](http://www.ssb.no/english/municipalities/1001)

lat:58.16410 lon:7.98078 Egsveien 100

N0709 Larvik, Vestfold, Østlandet, Norway, 41412, <http://www.ssb.no/english/municipalities/> 0709

lat:59.05321 lon:10.03502 Greveveien 16

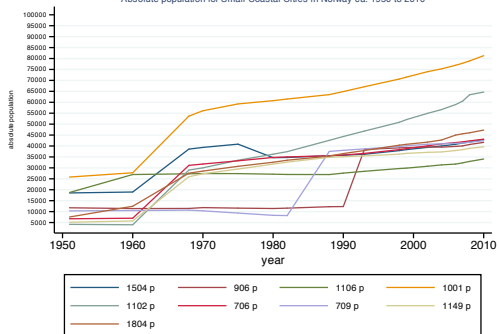
N0706 Sandefjord, Vestfold, Østlandet, Norway, 43126, [http://www.ssb.no/english/ municipalities/0706](http://www.ssb.no/english/municipalities/0706)

lat: 59.13399 lon:10.21159 Skiringssalveien 26, Sandefjord

N1102 Sandnes, Rogaland, Vestlandet, Norway, 65150, <http://www.ssb.no/english/municipalities/> 1102

lat: 58.84020 lon:5.72341 Sandnes legevakt, Jærveien 107

Absolute population for Small Coastal Cities in Norway ca. 1950 to 2010



France

FR06004 Antibes, Alpes-Maritime, Dept. 06, PACA, 76925, <http://antibes.fr/>

lat:43.60169 lon:7.11802 Central Hospital, 348-454 Chemin des 4 Chemins

lat: 43.60644 lon:7.11222 Centre Montsinéry, 2160 avenue Richard Pelissier

FR64102 Bayonne, Pyrenees-Atlantique, Dept. 64, Aquitaine, 45636, <http://www.bayonne.fr>

lat:43.49272 lon:-1.48269 Capiro Clinique Paulmy 14 Allée Paulmy, 64100 Bayonne, Frankrijk capio.fr

lat: 43.50474 lon:-1.47630 Clinique D'Amade

lat:43.48187 lon:-1.48006 Centre Hospitalier de la Cote Basque

lat:43.47967 lon:-1.48441 Clinique Delay

lat:43.48937 lon:-1.48377 Capiro Clinique Lafargue, 10 Rue Gentil Ader <capio.fr>

lat:43.49567 lon:1.45736 Santé Service Bayonne et Région, Avenue Plantoun

lat:43.49785 lon:1.46333 Capiro Clinique Saint Etienne, 15 Rue Jules Balasque

FR62160 Boulogne-sur-Mer, Pas de Calais, Dept. 62, NPdC, 45036, <http://www.ville-boulogne-sur-mer.fr/>

lat:50.72404 lon:1.64350 Centre Médical Chirurgical Obstétrical Côte d'Opale, 62280 Saint-Martin-Boulogne

lat: 50.72293 lon:1.62937 Centre Hospitalier de Boulogne-sur-Mer

FR06027 Cagnes-sur-Mer, Alpes-Maritime, Dept. 06, PACA, 48911 <http://www.cagnes-sur-mer.fr/>

lat:43.66374 lon:7.14882 Polyclinique Saint-Jean et Urgences, 92-94 avenue du Dr Donat, 06800 Cagnes sur Mer E3S Saint-Jean, 81 avenue du Dr Donat, 06800 Cagnes sur Mer

lat:43.65972 lon:7.13726 Consultations Saint-Jean, 53 avenue des Alpes

FR62193 Calais, Pas de Calais, Dept. 62, NPdC, 74888, <http://www.calais.fr/>

lat:50.94679 lon:1.86255 Centre Hospitalier de Calais, 11 Quai du Commerce

FR06029 Cannes, Alpes-Maritime, Dept. 06, PACA, 71526, <http://www.cannes.com/>

lat:43.56279 lon:7.00538 Hôpital Pierre Nouveau, 15 Avenue Broussailles

lat:43.55682 lon:7.02690 Centre de Long et Moyen Séjour, 27 Avenue Isola Bella

lat:43.55569 lon:7.01125 Les Bougainvillées, 2 Boulevard Delaup

lat:43.56475 lon:7.02777 Ipoca, 33 Boulevard Oxford

FR50129 Cherbourg-Octeville, Manche, Dept. 50, Reg. Basse-Normandie, 42113, [http:// www.ville-cherbourg.fr/](http://www.ville-cherbourg.fr/)

lat: 49.63698 lon:-1.61258 Centre Hospitalier Louis Pasteur

lat:49.63690 lon:-1.62675 Hôpital de Jour P. Male, 30 Rue Alma

lat:49.62675 lon:-1.63431 Fondation Bon Sauveur 12 Avenue Normandie and IME, La Mondee, Fondation Bon Sauveur, 50470 La Glacerie (photo, left).

lat:49.63863 lon:-1.60892 Centre Médico Psychologique pour Adultes, 151 Rue Val de Saire

lat:49.63886 lon:-1.61629 Ctre **Hospitalier** Public Du Cotentin 2 Rue Aristide Briand

lat:49.50910 lon:-1.46760 Centre Médico-Psychologique et Consultations Le Gavendest, 5 Rue Ecoles, 50700 Valognes

lat:49.5142 lon:-1.46547 Centre Médico Psycho Pédagogique 12 Rue Grand Pré, 50700 Valognes

lat:49.37870 lon:-1.53158 A.N.I.D.E.R Assoc Normande Installation à Domicile Epurations Rénales, 20 Avenue Division Leclerc, 50390 Saint-Sauveur-le- Vicomte

FR59183 Dunkerque, Nord, Dept. 59, NPdC, 70654, <http://www.ville-dunkerque.fr/>

lat:51.03810 lon:2.39540 Centre Hospitalier de Dunkerque, 130 Avenue Louis Herbeaux

lat:51.03736 lon:2.39868 Centre Hospitalier de Dunkerque,36 Rue Pont Neuf

lat:51.04169 lon:2.39330 Établissement public de Santé Mentale des Flandres, 567 Avenue Louis Herbeaux

lat:51.03232 lon:2.37878 Centre Entetiens Familiaux du Littoral, 8 Rue Beaumont

lat:51.03860 lon:2.41205 Cmp-cattp, 108 Rue Félix Coquelle

lat:51.03121 lon:2.37462 Maison Thérapeuthique Mathéïs, 16 Place Palais de Justice

lat:51.03963 lon:2.37948 Centre Médico-Psychologique pour Adolescents Les 400 Coups, 11 Rue Arbres

FR83601 Frejus, Var, Dept. 83, PACA, 52389, <http://www.ville-frejus.fr/>

lat:43.42055 lon:6.77484 Clinique Notre-Dame de la Merci! 215 Avenue Mar Ylautey, 83700 Saint-Raphaël, <clinique-ndm.com!>

lat:43.43946 lon:6.74910 Centre Hospitalier Intercommunal de Fréjus / Saint-Raphaël , 240, Av. de Saint-Lambert - B.P 110

lat:43.43762 lon:6.75555 Centre d' Auto-Dialyse de L'Avodd, 605 Avenue André Léotard,

lat:43.43487 lon:6.75588 Clinique les Lauriers/Clinique Chirurgicale, Rue Jean Giono

lat:43.42771 lon:6.75571 Clinea, 40 Rue Roland Garros

lat:43.42926 lon:6.76197 Hôpital de Jour Psychiatrie Adultes, 1591 Avenue de Lattre de Tassigny

lat:43.42788 lon:6.77199 H.A.D. Saint Antoine, 185 Avenue Commdt Charcot

lat:43.42469 lon:6.76586 Centre Hospitalier Intercommunal Fréjus - Saint-Raphaël, 126 Rue Garonne

FR83069 Hyeres, Var, Dept. 83, PACA, 56275, <http://www.ville-hyeres.fr/>

lat: 43.11818 lon: 6.11281 Centre Hospitalier Général - Marie-Josée Treffot, Rue Maréchal Juin
lat:43.08464 lon:6.11157 Hôpital San Salvadour, 4312 Route de l'Almanarre
lat: 43.11999 lon: 6.11950 Marie Des Anges Maison Conval, 5 Rue Victor Hugo
lat: 43.11506 lon: 6.12463 Clinique San Marguerite, Rue Heliotrope
lat: 43.12101 lon: 6.12096 A.v.o.d.d (Assoc Varoise pour Organisation de La Dialyse À Domicile), Rue Eugénie,
lat: 43.03751 lon: 6.13803 Centre de Jour Infanto-Juvenile (L'hôpital Renee Sabran), 550 Boulevard Édouard Herriot
lat: 43.11675 lon: 6.12859 Centre de Jour La Lézardièrre Sevrage et Traitement Alcool Tabac Troubles des Conduites

Alimentaires, 50 Avenue Gambetta,

lat:43.08254 lon:6.12119 Pomponiana Olbia
lat:43.08668 lon:6.11921 Oeuvre Lyonnaise Hopitaux Climatique, L'hôpital Leon Berard

FR56121 Lorient, Morbihan, Dept. 56, Bretagne, 60286, <http://www.lorient.com/>

lat: 47.75148 lon:-3.36004 Hôpital à Domicile de l'Aven à Etel, 14 Rue Colbert
lat: 47.74812 lon:-3.37764 Centre Hospitalier de Bretagne Sud, 27 rue du docteur Lettry
lat: 47.75026 lon:-3.36207 Centre de Consultation Psychothérapique pour Enfants et Adolescents C.C.P.E.A., 27 Rue Olivier

de Clisson

lat: 47.75505 lon:-3.37180 Centre Médico Psychologique C.C.A, 50 Rue Louis Braille
lat: 47.75338 lon:-3.35819 Centre Hospitalier de Bretagne Sud Services de Soins et Médico-Techniques, Rampe Hôpital des Armées

FR17300 La Rochelle, Charente-Maritime, Dept. 17, Poitou-Charente, 80014, <http://www.ville-larochelle.fr/>

lat:46.17632 lon:-1.13610 Centre Hospitalier (multiple locations), 208 Rue Marius Lacroix,
lat: 46.16829 lon:-1.17796 Avenue de Grand Varennes,
lat: 46.17261 lon:-1.17457 5 Rue Paul Gauguin,
lat: 46.16348 lon:-1.20437 10 Rue Montréal
lat: 46.15983 lon:-1.14039 Centre Hospitalier Service Psychiatrique-Personnes Agées
lat: 46.16317 lon:-1.15480 Centre Médico Psychopédagogique C.M.P.P, 34 Place Verdun
lat: 46.15175 lon:-1.12763 Cattap Centre d'Accueil à Temps Partiel, 10 Rue Alphonse Baudin
lat: 46.16083 lon:-1.14455 Trésorerie La Rochelle Ets Hospitalier, 60 Rue Thiers
lat: 46.17364 lon:-1.12658 Centre Médico-Chirurgical de L'Atlantique et le Centre d'Aide par le Travail, 26 Rue Moulin des Justices, 17138 Puilboreau
lat: 46.20127 lon:-1.36630 Hôpital Local Saint-Honore, 53 Rue Hôpital, 17410 Saint-Martin-de-Ré

FR35288 Saint Malo, Ille et Vilaine, Dept. 35, Bretagne, 51292, <http://www.saint-malo.fr/>

lat: 48.62517 lon:-1.98415 Clinique de la Côte d'Émeraude, 1 Rue Maison Neuve
lat:48.63757 lon:-2.00874 Centre Hospitalier de Saint-Malo

FR44184 Saint Nazaire, Loire-Atlantique, Dept. 44, PdlL71373, <http://www.mairie-saintnazaire.fr/>

lat:47.27160 lon:-2.21825 Polyclinique de Saint-Nazaire, 46 Rue Jean Macé,

lat: 47.27518 lon:-2.23731 Centre Hospitalier Saint-Nazaire, 89 Boulevard de l'Hopital,

lat: 47.25747 lon:-2.24336 Hopital, 116 Rue Ferdinand Buisson,

lat: 47.25341 lon:-2.26542 Polyclinique de l'Europe

lat: 47.27716 lon:-2.22140 Consultation Médico Psychologique O.C.H.S, 31 Rue Henri Barbusse

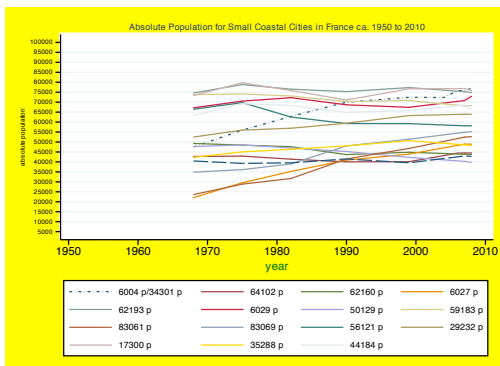
FR34301 Sete, Hérault, Dept. 34, Languedoc-Roussillon, 43665, <http://www.annuaire-mairie.fr/ville-sete.html>

lat:43.40806 lon:3.67071 Centre Hospitalier Intercommunal Bassin de Thau, 56 Rue Révolution

lat: 43.40846 lon: 3.70395 Polyclinique Sainte-Thérèse, 6 Quai Mas Coulet

lat: 43.40639 lon: 3.66811 Centre Hospitalier de Sète

lat:43.40639 lon: 3.66811 Union Gestion Ets Caisse Assur Maladi LR, 16 Cor Neuburg



Italy

IT858007 Anzio, Reg. Lazio, Prov. Roma, 46074, <http://statistiche.comune.anzio.roma.it> <http://www.comuni-italiani.it/058/007/>

lat:41.46182 lon:12.63720 Ospedali Anzio-Nettuno, Via Cupa dei Marmi,
lat: 41.45118 lon: 12.62518 Suore Missionarie del Sacro Costrato Ospedale Militare Lungodegenza, Via Roma, 1
lat: 41.44844 lon: 12.62645 Osp. Villa Albani Anzio, Via Aldobrandini, 32
lat: 41.45882 lon: 12.62203 Associazione Comunita' Masimo Onlus, Via dell'Oratorio di Santa Rita, 3

IT858032 Civitavecchia, Reg. Lazio, Prov. Roma, 50891, <http://www.comuni-italiani.it/058/032/>

lat:42.09872 lon:11.80936 Ospedale Civile San Paolo! e Azienda Unita Sanitaria Locale Roma F, Largo Donatori di Sangue
lat: 42.09431 lon: 11.79800 Azienda Unita' Sanitaria Locale Roma F - Centralino, Viale Etruria, 34
lat: 42.08421 lon: 11.80356 Azienda Unita Sanitaria Locale Roma F, Piazza Giuseppe Verdi, 2
lat: 42.09484 lon: 11.79070 Azienda Sanitaria Locale Roma F - Residenza Sanitaria Anziani, Piazza Luigi Calamatta, 18
lat: 42.08137 lon: 11.81532 Azienda Unita Sanitaria Locale Roma F, Via Molise, 10

IT858120 Fiumicino, Reg. Lazio, Prov. Roma, 56602, <http://www.comuni-italiani.it/058/120/>

lat:41.76031 lon:12.23326 Croce Rossa Italiana, Via Vistola

IT845010 Massa, Reg. Toscana, Prov. Massa-Carrara, 70818, <http://www.comuni-italiani.it/045/010/>

lat:44.02846 lon:10.14346 Ospedale Generale Prov. S.S. Giacomo e Cristoforo, Via Carlo Orecchia
lat: 44.04272 lon:10.14039 Piazza Ospedale
lat: 44.03229 lon: 10.13880 Azienda Usl N.1 Massa E Car. - Anestesia E Rianimazione, Via Sottomonte, 1
lat: 44.01890 lon: 10.15388 Ospedale G. Pasquinucci, Via Aurelia Sud
lat: 44.03247 lon: 10.13610 Misericordia San Francesco, Viale Roma, 38
lat: 44.01731 lon: 10.08614 Soc. Volontari Soccorso E Benef. Di Fossola, Via Carlo Don Gnocchi, 5
lat: 44.01156 lon: 10.10329 Croce Verde Marina Di Massa, Via San Leonardo, 424

IT858072 Nettuno, Reg. Lazio, Prov. Roma, 40651, <http://www.comuni-italiani.it/058/072/>

lat:41.46000 lon:12.63591 Ospedali Anzio-Nettuno, Via Cupa dei Marmi
lat: 41.45118 lon:12.62518 Ospedale Militare Lungodegenza, Via Roma, 15
lat: 41.44835 lon:12.62643 Osp. Villa Albani Anzio, Via Aldobrandini, 32
lat: 41.45617 lon:12.65173 Italciniche Srl, Via Antonio Gramsci, 65
lat: 41.45597 lon:12.65130 Suore Ospedaliere Del Sacro Cuore Di Gesu', Via Antonio Gramsci, 71

IT849012 Piombino, Reg. Toscana, Prov. Livorno, 34369 <http://www.comune.piombino.li.it/>

lat: 42.93930 lon:10.51095 Ospedale Villamarina Piombino, Via Carlo Forlanini
lat: 42.92614 lon:10.53176 Associazione Di Pubblica Assistenza Piombino, Via Bruno Buozzi, 23

IT863060 Pozzuoli, Reg. Campanile, Prov. Napoli, 83426, <http://www.comune.pozzuoli.na.it/section/>

home.xml"

lat: 40.84847 lon:14.07501 Ospedale Santa Maria delle Grazie, Monterusciglio
lat: 40.82780 lon:14.18170 Presidio Ospedaliero Napoli Ovest Ospedale San Paolo, Via Terracina, 219

IT810046 Rapallo, Reg. Ligure, Prov. Genova, 30224 <http://www.comune.rapallo.ge.it/>

lat: 44.35080 lon:9.22466 Croce Bianca Rapallese, Piazzale Cile, 5

lat: 44.35036 lon:9.22822 Croce Rossa Italiana, Via Generale Alessandro Lamarmora, 2

lat: 44.35372 lon:9.21397 P.A. Volontari Del Soccorso S. Anna Rapallo, Via Luigi Arpinati, 20

IT808055 Sanremo, Reg. Ligure, Prov. Imperia, 56903, <http://www.comunedisanremo.it/>

lat:43.82250 lon:7.77908 Ospedale Giovanni Borea, Via Giovanni Borea

IT809056 Savona, Reg. Ligure Prov. Savona,, 59889. <http://www.comune.savona.it/IT/HomePage>

lat:44.32001 lon: 8.49032 Ospedale San Paolo, Via Genova, 30

lat: 44.30225 lon: 8.47605 Croce Rossa Italiana - Emergenza, Via Giovanni Scarpa, 3

lat: 44.30475 lon: 8.48044 Croce Bianca Pubblica Assistenza - Emergenza Ambulanza, Corso Giuseppe Mazzini, 58

IT811015 La Spezia, Reg. Ligure, Prov. La Spezia, 94206. <http://www.comune.laspezia.it/ilcomune>

lat: 44.11150 lon: 9.83141, Presidio Ospedaliero de La Spezia

lat: 44.11360 lon: 9.84081, Pubblica Assistenza Della Spezia, Via Giosuè Carducci, 10

lat: 44.11727 lon: 9.80334, Croce Rossa Italiana, Via Santa Caterina, 29

lat: 44.11296 lon: 9.83036, Pubblica Assistenza Della Spezia, Via Mario Asso, 1

lat: 44.11177 lon: 9.83218, Cassa Di Risparmio Della Spezia Spa - Agenzia Ospedale Civile S.Andrea, Via Vittorio Veneto,

197

lat: 44.09247 lon: 9.86840, Croce Rossa Italiana, Viale San Bartolomeo, 446

lat: 44.10674 lon: 9.82922, Centro nautico e sommozzatori, Polizia del Mare

IT859032 Terracina, Reg. Lazio, Prov. Latina, 44081, <http://www.comune.terracina.lt.it/>

lat: 41.28884 lon: 13.25287 Presidio Ospedaliero Centro e Croce Rossa Italiana - Ambulatorio, Via Roma, 119

lat: 41.29600 lon: 13.23730 Ospedale Alfredo Fiorini, Via Firenze

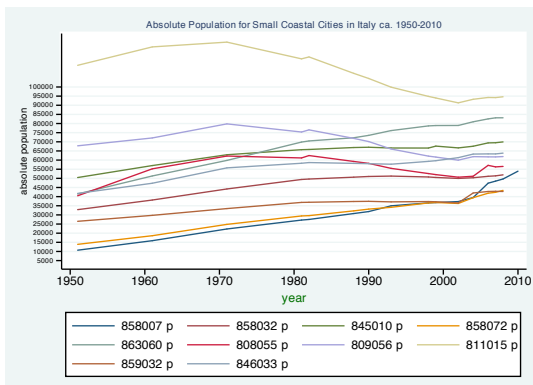
IT846033 Viareggio, Reg. Toscane, Prov. Lucca, 63276, <http://www.comune.viareggio.lu.it/>

lat: 43.87740 lon: 10.24416 Via Fratti Ospedale, 55049

lat: 43.82796 lon: 10.29100 Croce Verde, Via Giuseppe Garibaldi, 171

lat: 43.85772 lon: 10.24208 Misericordia Di Torre Del Lago, Via Marina di Levante

lat: 43.82672 lon: 10.29242 Misericordia Di Torre Del Lago - Pronto Soccorso, Via Aurelia, 201



Portugal

PT50105 Faro, Algarve, Portugal, 58554, http://www.cm-faro.pt/portal_autarquico/farov_pt-PT

lat:37.04306 lon:-7.96471 Hospital Particular do Algarve SA, Urbanização Gambelas 2, Faro

PT50111 Portimao, Algarve, Portugal, 47925, http://www.cm-portimao.pt/portal_autarquico/portimao_v_pt-PT

lat:37.15530 lon:-8.53951 Unidade Hospitalar de Portimao

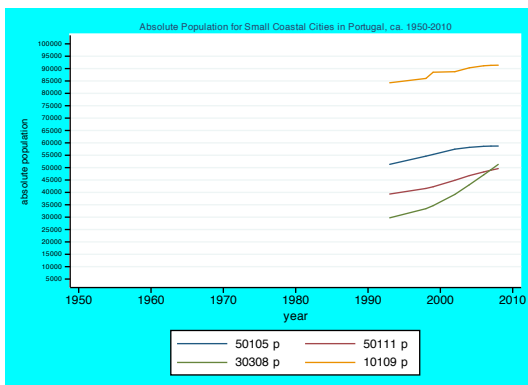
PT30308 Sesimbra, Lisboa, Portugal, 46098, <http://www.cm-sesimbra.pt/pt>

lat: 38.44423 lon:-9.10081 Extensão de Saúde Sesimbra, Largo 5 de Outubro, 2970

PT10109 Viana do Castelo, Norte, Portugal, 91053, <http://www.cm-viana-castelo.pt/>

lat: 41.70542 lon:-8.81762 Particular de Viana do Castelo

lat:41.69719 lon:-8.83254 HOSPITAL DE SANTA LUZIA DE VIANA DO CASTELO Santa Maria Maior



Spain

ES11015 Chiclana de la Frontera, Reg. Andalucía, Prov. Cadiz, 77293, http://chiclana.es/Informacion_economic.626.0.html; <http://www.juntadeandalucia.es:9002/sima/htm/sm11015.htm>

- lat: 36.42089 lon:-6.15022 Centro Médico Chiclana
- lat: 36.44848 lon:-6.21296 Centro de Salud El Lugar, Calle Jesús Nazareno, 9
- lat: 36.35631 lon:-6.15881 Clínica novo Sancti Petri, Urb. Novo Sancti Petri
- lat: 36.41981 lon:-6.14278 Centro de Salud Padre Salado, Calle Los Jardines, 17
- lat: 36.42083 lon:-6.15859 Centro de Especialidades Médicas La Longuera, Calle La Longuera
- lat: 36.41573 lon:-6.15969 Clínica Casber, Avda. de la Diputación

ES04902 El Ejido, Reg. Andalucía, Prov. Almería, 84227, <http://www.elejido.org/>

- lat: 36.76925 lon:-2.80069 Consultorio Medico Santo Domingo, Avenida Oasis, 99
- lat: 36.78093 -2.83198 Consultorio Medico Pampanico, Barrio Carpinteros, S/N, Ejido
- lat: 36.77506 lon:-2.81274 Centro de Salud Distrito Poniente de Almería and the Industrial Accident Clinic, Calle Skinner B. F., S/N
- lat: 36.77276 lon:-2.81175 Centro Medico Granada, Cl. Gladiolos, 21

ES11027 El Puerto de Santa María, Reg. Andalucía, Prov. Cadiz

- lat: 36.59589 -6.23315 José Manuel Pascual Pascual S.A: Hospital General Santa María del Puerto, C/ Valdés s/n 11500 El Puerto de Santa María

ES15036 Ferrol, Reg. Galicia, Prov. A Coruña, 77155, <http://www.ferrol.es/>

- lat: 43.48069 lon: 8.20239 Hospital General Juan Cordona, Pardo Bazan
- lat: 43.48979 lon:-8.22260 Complejo Hospitalaria Arquitecto Marcide-Prof. Novoa Santos and Hospital Basico De La Defensa, Ctra. San Pedro de Leixa. Lugar da Pega

ES46131 Gandia, Reg. Valencia and Prov. Valencia, 80020, <http://www.gandia.org/web/guest/>

- lat: 38.96607 lon:-0.18962 Hospital Francesc de Borja de Gandia, Passeig Germanies, 71
- lat: 38.97251 lon:-0.17566 Centro Médico Gandía, Calle Daimus, 26

ES29054 Fuengirola, Reg. Andalucía, Prov. Málaga, 71783, <http://www.fuengirola.org/>

- lat: 36.54405 lon:-4.62438 Clínica Salus Fuengirola, Avenida Alcalde Clemente Diaz Ruiz

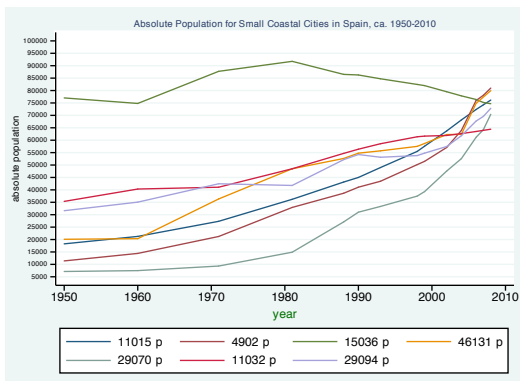
ES11032 Sanlúcar de Barrameda, Reg. Andalucía, Prov. Cadiz, 63968, <http://www.aytosanlucar.org>, www.juntadeandalucia.es:9002/sima/htm/sm11032.htm

- lat: 36.78071 lon:-6.35254 Mapard Centro Medico, Calle Bolsa, 51
- lat: 36.78064 lon:-6.35479 Centro de Salud de Sanlúcar Barrio Bajo Avenida Calzada del Ejército, 14,
- lat: 36.77882 lon:-6.35420 José Manuel Pascual Pascual S.A: Virgen del Camino, Carretera de Chipiona a Sanlúcar, KM 63,

ES29094 Velez-Malaga, Reg. Andalucia, Prov. Malaga, 74190, <http://www.ayto-velezmalaga.es/> velezPorta"

36.78661 lon:-4.10416 Hospital San Juan de Dios, Plaza San Juan de Dios

36.75099 lon:-4.08886 Comarcal de la Axarquía, La Mata,



Germany

DE35201 Cuxhaven, Germany, 50846, <http://www.cuxhaven.de>

lat: 53.85299 lon: 8.69068 Stadtkrankenhaus, Altenwalder Chaussee 10

lat: 53.88129 lon: 8.64746 Klinik Nordseeküste, Hermann-Daur-Weg 21

lat: 53.88668 lon: 8.65614 Kurklinik Strandrobbe Cuxhaven, Neptunweg 1

DE4020 Emden, Germany, 51292, <http://www.emden.de/de/main.htm>

lat: 53.37607 lon: 7.21205 Klinikum Emden–Hans-Susemihl-Krankenhaus, Bolardusstraße 20

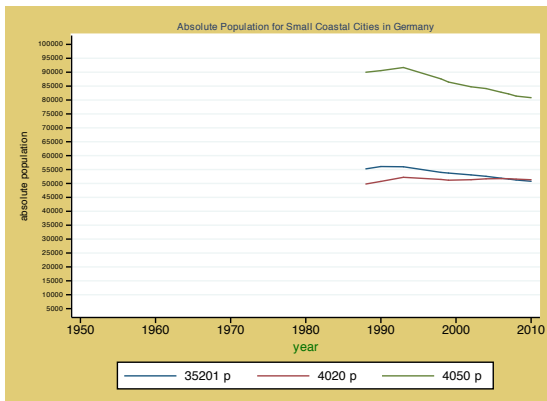
DE4050 Wilhelmshaven, Germany, 81137, <http://www.wilhelmshaven.de/>

lat: 53.54529 lon: 8.08315 Reinhard-Nieter-Krankenhaus - Städtische Kliniken gGmbH - Friedrich-Paffrath-Straße 100

lat: 53.51684 lon: 8.10600 Sint Willehad, Ansgarstraße 12

lat: 53.52379 lon: 8.12340 Rehazentrum Wilhelmshaven - Postakut- und Rehabilitationszentrum für Orthopädie und

Neurologie, Bremer Straße 2



West-Vlaanderen, Belgium and the Netherlands

NL0400 Den Helder, The Netherlands, 57454, <http://www.denhelder.nl/>

lat: 52.95796 lon: 4.74455 Gemini Ziekenhuis, Huisduinerweg 3

Antillean Community; extraordinarily poor race relations

B31043 Knokke-Heist, Belgium, 38893, <http://inwoners.knokke-heist.be>.

lat: 51.33842 lon: 3.30329 AZ Onze Lieve Vrouw Ter Linden, Graaf Jansdijk 162

lat: 51.33981 3.26252 Duinbergen Clinic, Duinbergenlaan 33"

B35013 Oostende, Belgium, 68175, <http://www.oostende.be/NUTS> 3, BE255

lat: 51.22237 lon: 2.91361 AZ Sint-Jan Brugge-Oostende AV - campus Henri Serruys, Kairostraat 84

lat: 51.21810 lon: 2.93254 vzw Algemeen Ziekenhuis Damiaan Oostende, Gouwelozestraat 100

NL0530 Hellevoetsluis, The Netherlands, 39533, <http://www.hellevoetsluis.n#>

no hospital

NL3200 Spijkenisse, The Netherlands, 72442, <http://www.spijkenisse.n#live/>

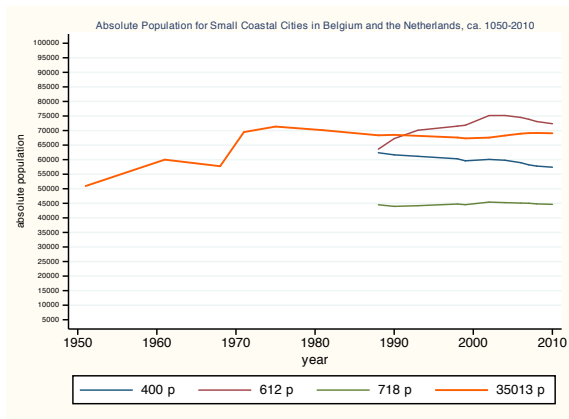
lat: 51.84679 lon: 4.33670 Ziekenhuis Ruwaard van Putten, RvPstraat 500

NL0453 Velsen, The Netherlands, 67355, <http://www.velsen.nl>

no hospital

NL0718 Vlissingen, The Netherlands, 44608, [http://www.cbs.n#nl-N\\$menu/home/default.htm](http://www.cbs.n#nl-N$menu/home/default.htm)

lat:51.45155 lon: 3.56476 Admiral de Ruyter Ziekenhuis, Koudekerkseweg 88



Denmark and Sweden

DE0561, Esbjerg, Denmark, 71129, <http://esbjerg.dk/Default.aspx?ID=1768>

lat: 55.47387 lon: 8.45659 Sydvestjysk Sygehus, Finsensgade 35, Esbjerg

lat: 55.46284 lon: 8.45557 Aleris-Hamlet Privathospitalet, Bavnehøjvej 2, Esbjerg

shipscrapping yard: Smedegaarden. Energi Kommune

SE1380, Halmstad, Sweden, 59005, <http://www.halmstad.se/>

lat: 56.68268 lon: 12.84584 Lanssjukhuset *Halmstad*, Malmo University Teaching Hospital, Fogdegatan

SE1283, Helsingborg, Sweden, 96676, <http://www.helsingborg.se>

lat: 56.04710 lon: 12.70435 Helsingborg Lasarett

lat: 56.05938 lon: 12.69765 Arbetsterapi Statten, Barnvårdscentralen Statten - BVC, Deltagruppen, Vårdcentralen Statten, OD Krooks gata 53

lat: 56.03960 lon: 12.71386 Barnvårdscentralen Högaborg - BVC, Distriktsköterskemottagningen Högaborg,

Furutorpsgatan 71

lat: 56.05580 lon: 12.69065 Barnvårdscentralen Tågaborg - BVC, Vårdcentralen Tågaborg, Tågagatan 38

lat: 56.04105 lon: 12.70079 Barnmorskemottagningen Gasverksgatan, Gasverksgatan 15

lat: 56.04722 lon: 12.69140 Barnmorskemottagningen Najaden, Drottninggatan 7

lat: 56.06264 lon: 12.72904 Barnvårdscentralen Familjehuset Oliven - BVC Barnmorskemottagningen Oliven,

Vårdcentralen Drottninghög, Blåkullagatan 11

lat: 56.06493 lon: 12.69506 Bjuvs preventivmottagning för unga, Almgatan 1

lat: 56.03085 lon: 12.74031 Barnvårdscentralen Brunnen - BVC Distriktsköterskemottagningen Brunnen,

Gustavslundsvägen 2

lat: 56.09430 lon: 12.65699 Barnvårdscentralen Laröd - BVC, Distriktsköterskemottagningen Laröd, Travvägen 27

lat: 56.04984 lon: 12.72635 Barnvårdscentralen Rosengården - BVC, Distriktsköterskemottagningen Husensjö

Vårdcentralen Husensjö, Skaragatan 102

lat: 56.03221 lon: 12.71964 Vårdcentralen Närlunda, Närlundavägen 26

lat: 56.02844 lon: 12.70943 Planteringen - BVC, Vårdcentralen Planteringen, Öresundsgatan 9

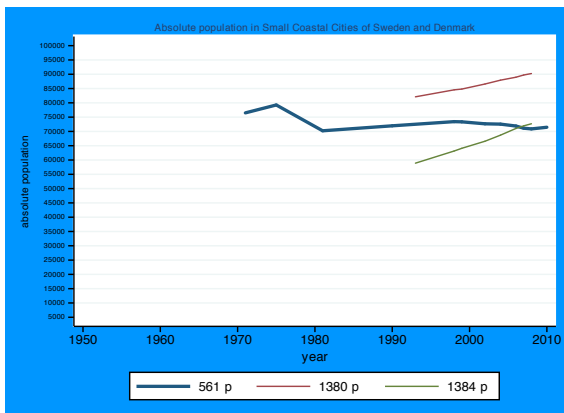
lat: 56.02843 lon: 12.72567 Barnvårdscentralen Ramlösa - BVC, Vårdcentralen Ramlösa, Elinebergsplatsen 5

SE1384, Kungsbacka, Sweden, 73938, http://www.kungsbacka.se/site/emplates/KBIInformationPage____3025.aspx/

lat: 57.49350 lon: 12.09118 Carema Narakut, Tölövägen 5

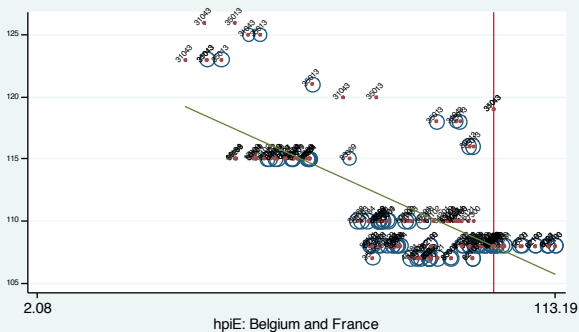
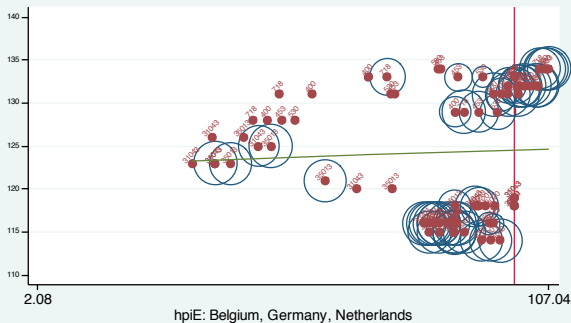
lat: 57.48535 lon: 12.07709 Carema Huslakarna, Nygatan 10

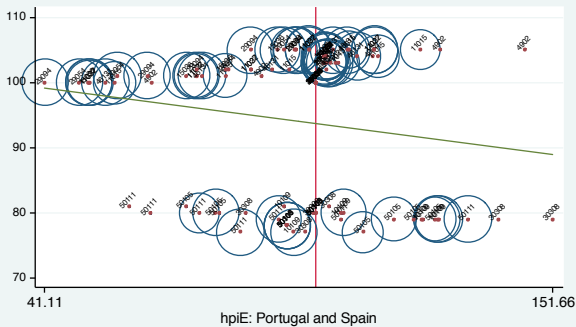
lat: 57.45322 lon: 11.96631 Carema Huslakarna, Valldavägen 29



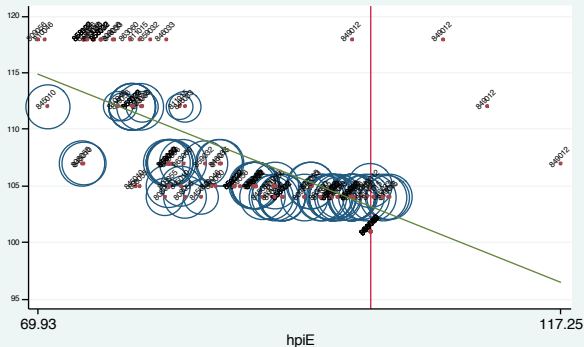
Alternative graphical illustration of data

HpiE: graphs by nation

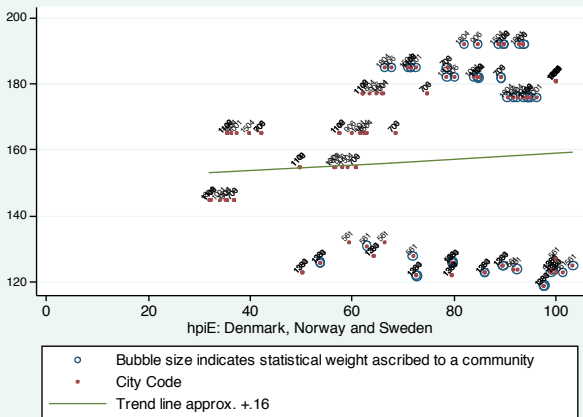




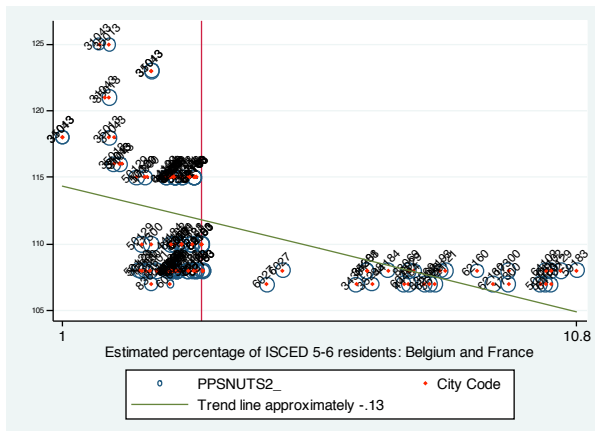
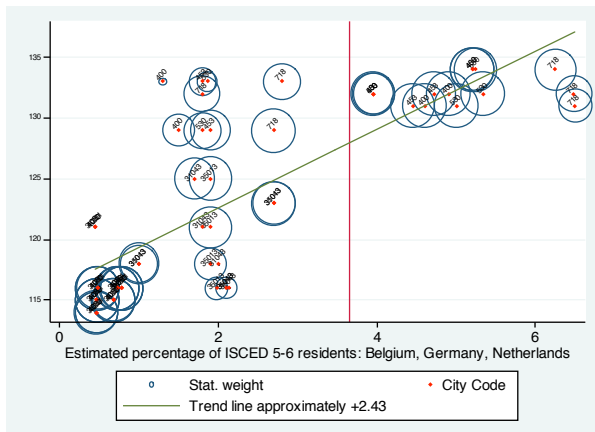
- Bubble size indicates stat. weight ascribed to a community
- City Code
- Trend line approximately $+0.06$

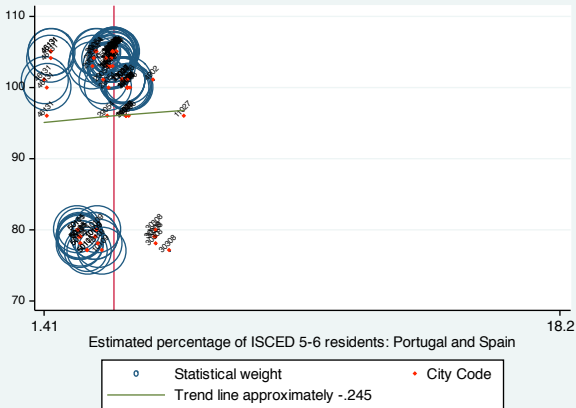


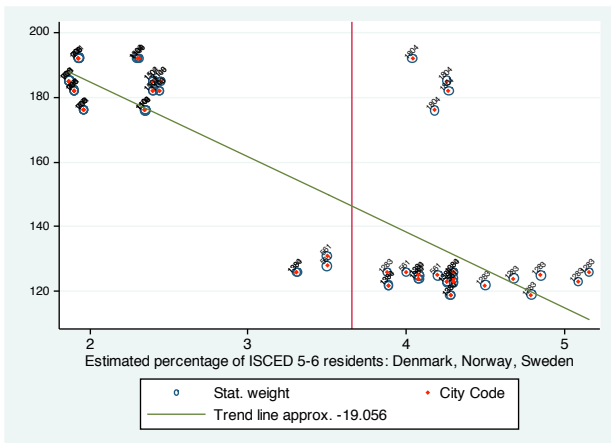
- Bubble size indicates stat. weight ascribed to a community
- City Code
- Trend line approximately -0.225



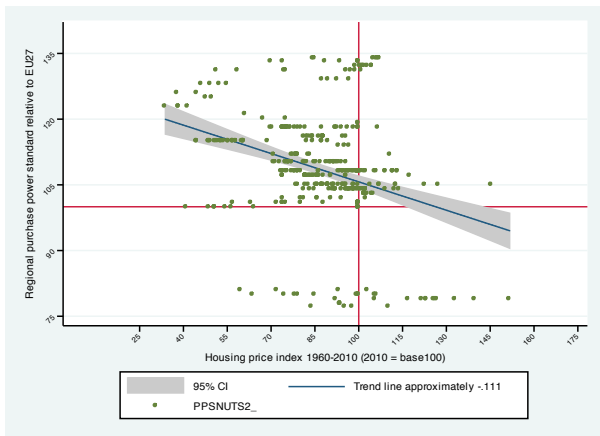
ISCED 5-6: graphs by nation





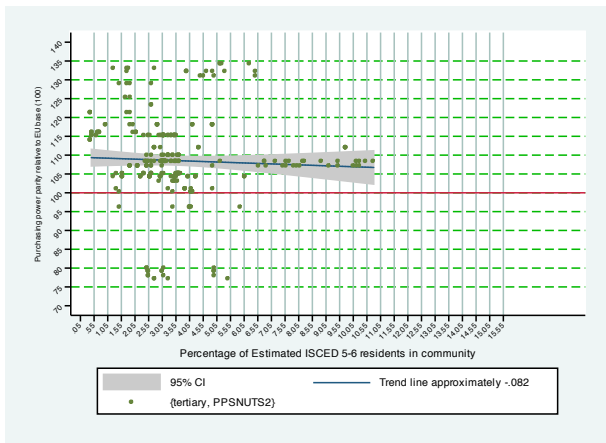


PPSNUTS2, hpiE for Eurozone (France, Germany, Italy, Netherlands, Portugal, Spain)



Stata command: `graph twoway (lfitci PPSNUTS2_ hpiE) (scatter PPSNUTS2_ hpiE)`

PPSNUTS2, tertiary for cities in the Eurozone.



Stata command: graph twoway (lfitci PPSNUTS2_ tertiary) (scatter PPSNUTS2_ tertiary)

Trends over time

Time is relevant to any discussion of a community. It is so integrated in a layman's comprehension of the world around him that it seems inconceivable to think a model of economic phenomena which eschews this fundamental component could be constructed. To more clearly illustrate the trend of the variables subject to the effect of time (*PPSNUTS*, *hpiE* and *tertiary*), I constructed a logarithmic scale of the data and regressed as shown:

```
. regress lnPPSNUTS2 lnhpiE Intertiary lnkmtOCmetro provcap ctown lngeokmsq lnpopdens
```

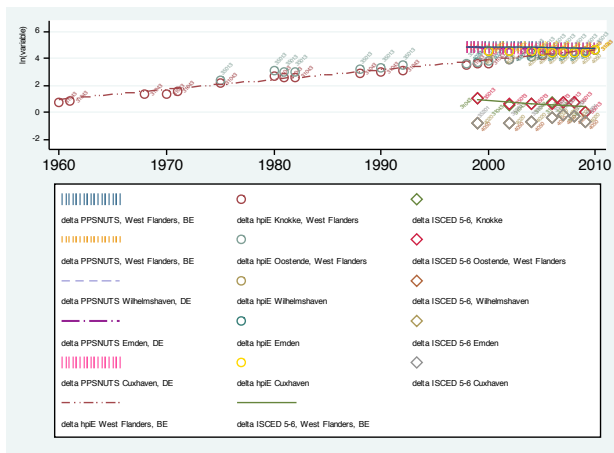
Source	SS	df	MS	Number of obs =	341
Model	2.32023858	7	.331462654	F(7, 333) =	10.55
Residual	10.4610229	333	.031414483	Prob > F =	0.0000
				R-squared =	0.1815
				Adj R-squared =	0.1643
Total	12.7812615	340	.037591946	Root MSE =	.17724

lnPPSNUTS2	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
lnhpiE	-.1800328	.0481406	-3.74	0.000	-.2747309	-.0853347
Intertiary	-.0193273	.0171942	-1.12	0.262	-.0531502	.0144956
lnkmtOCmetro	.0757622	.016137	4.69	0.000	.0440189	.1075056
provcap	-.0389325	.0277829	-1.40	0.162	-.0935846	.0157195
ctown	-.085795	.0244436	-3.51	0.001	-.1338784	-.0377117
lngeokmsq	-.0026403	.0205594	-0.13	0.898	-.043083	.0378024
lnpopdens	-.0240512	.0224733	-1.07	0.285	-.0682587	.0201563
_cons	5.475442	.3180666	17.21	0.000	4.849768	6.101115

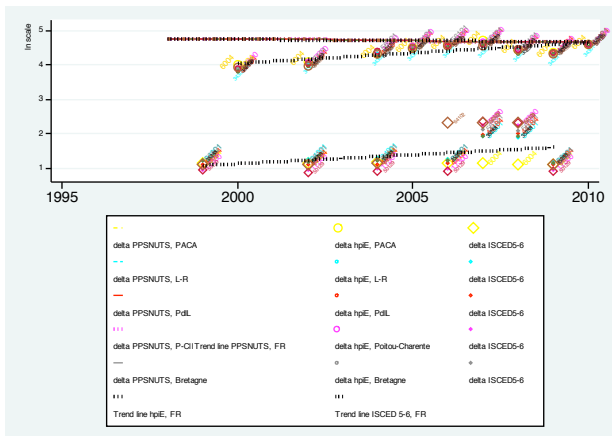
The results are consistent with the general trends observed in the thesis. The overall predictive power of the regression decreases by about 27%. On the positive side, the p-values hew closer to the top of the Student's distribution.

Below are the corresponding graphs for countries in the Eurozone.

Belgium and Germany: a graphic illustration of trends with respect to purchase power parity standards, housing prices and post-secondary education over time.



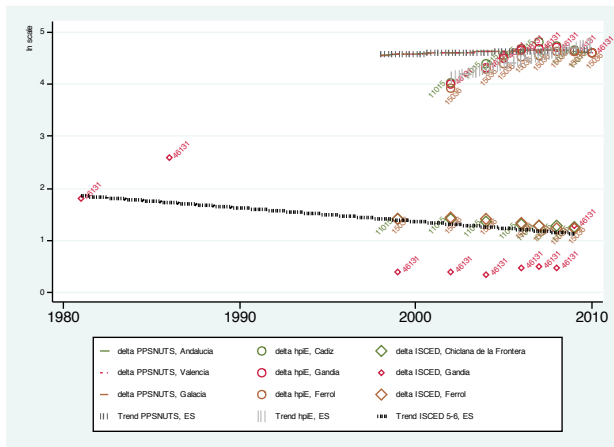
Regional France: a graphic illustration of trends with respect to purchase power parity standards, housing prices and post-secondary education over time.



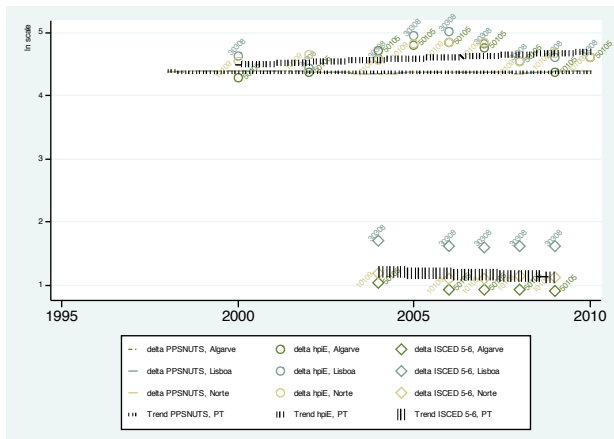
The Netherlands: a graphic illustration of trends with respect to purchase power parity standards, housing prices and post-secondary education over time.



Regional Spain: a graphic illustration of trends with respect to purchase power parity standards, housing prices and post-secondary education over time.



Portugal: a graphic illustration of trends with respect to purchase power parity standards, housing prices and post-secondary education over time.



Italy: a graphic illustration of trends with respect to purchase power parity standards, housing prices and post-secondary education over time.

