Adapting the Proust Index to examine the macroeconomic variations in the European Union

by

Alessandro Federico Conway

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This thesis was presented

by

Alessandro Federico Conway

It was defended on

July 17, 2017

and approved by

Gemma Marolda, PhD, Political Sciences

James R. Maloy, PhD, Economics

Marco Cucculelli, PhD, Economics

Thesis Advisor: Bernard Hagerty, PhD, History

ADAPTING THE PROUST INDEX TO EXAMINE THE MACROECONOMIC VARIATIONS IN THE EUROPEAN UNION

Alessandro Federico Conway

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The viability of the European project is coming under serious question due to a combination of persistent economic stagnation coupled with the migration crisis, which together fuel the relentless rise of anti-establishment and anti-E.U. sentiments across the continent. Is the magnitude of these crises and their obdurate resistance to progress leading the European project towards failure? One of the potential future paths of the E.U., a formal ‘two-speed’ Europe, is in the works regarding the sectors of E.U. defense and border control. If such a framework were to be applied as a solution to their economic problems, E.U. countries could target policies based on their economic performance rather than a one-size-fits-all E.U. policy. Although a current, intrinsic, ‘two-speed’ framework exists in the E.U., it encounters several difficulties (namely political will and through a form of social pressure) that undermine its success, ultimately rendering it unconvincing. I develop an alternative approach based solely on economic performance by adapting the Proust Index, a macroeconomic index originally devised by The Economist which aggregates seven indicators. This analysis firstly reveals clearly divergent patterns of economic trends within the E.U. In the context of a ‘two-speed’ Europe, it then provides a set of hypothetical 'definitions' along which E.U. member-states could be divided, something largely missing or at best vague in the few instances it appears in official statements and in economic literature. Ultimately, because the significant gap in performance between the two groups is increasing, this thesis suggests that urgent action needs to be taken to address it whichever option the E.U. chooses for its future.

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PREFACE

I am very grateful for the encouragement and assistance by members of the University of Pittsburgh Dietrich School of Arts and Sciences and the Honors College during my undergraduate degree. I would like to particularly thank my Thesis Advisor, Dr. Bernard Hagerty, for his unfailing support and inspiration, and for his efforts in guiding me through the University and this thesis that is somewhat outside his main field of study. I greatly appreciate the time and effort put into evaluating this thesis by the other committee members, Drs. Gemma Marolda, James Maloy, and Dr. Marco Cucculelli who graciously traveled from Ancona, Italy, to attend my thesis defense.

As well as peers and faculty at the University of Pittsburgh, I was fortunate to encounter knowledgable and friendly colleagues during my 2017 spring semester while studying abroad at Sciences Po in Paris, France. Particularly valuable was to be at a center of political and economic thought just as the idea of a two-speed Europe re-emerged for serious policy consideration. Seeing and meeting people with influence in planning the future of the E.U. in light of the UK's Brexit vote and the contemporary government elections of the Netherlands, France, and the UK was particularly inspiring, including the ex-Prime Minister of Italy, Enrico Letta and economic historian and author Thomas Piketty.

Finally, I am deeply appreciative of the opportunities and support provided by my parents and sister.

1.0 INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION

Following a period of stability and steady economic growth, the European Union (E.U.) has experienced a multitude of crises starting with the financial collapse of 2007-2008 that was followed up by a full-on economic crisis two years later. While some of the E.U.'s twenty-eight member-states are emerging from the economic woes, others are still suffering. Domestic reforms imposed by the E.U. have been met with significant public outcry and not always produced results, in particular the austerity measures and spending reviews to pay back debt and increase competitiveness. The economic stagnation that characterizes many of the European economies today puts further into doubt the goals and success of the E.U. and raises the question of how much more strain its citizens can handle.

The crises have also revealed several holes within the E.U. framework. For example, the Stability and Growth Pact of 1999, which sought to preserve stability within the Economic and Monetary Union (EMU) by introducing moderate budgetary oversight and a dissuasive punishment mechanism, largely failed on its mandate as public debt levels soared in 2008 and remain high. Similarly, a Eurozone-wide fiscal expansion to stimulate its economy is impossible given that the European Central Bank (ECB) by mandate cannot bail out individual countries' debts (as this would share the burden of the debt across the Euro area). This limits the E.U.'s options, keeping austerity as a focus even as the value of the fiscal multiplier turned out to be much higher than expected, hence augmenting its cost on the economy.[1] Attempts to resolve some of these holes are also not attaining their goals, such as the Fiscal Compact of 2012 that replaced the Stability and Growth Pact but is producing similar results, or the Banking Union of 2012 to decrease risks within the E.U. banking sector through deposit insurance for the eurozone amidst a full fledged banking crisis. While not entirely the E.U.'s fault, it suffers from frequently being a scapegoat in domestic politics which further hurts its case. To be fair, the E.U.'s attempts came much too late (Banking Union) and may have needed to have been implicit from the onset.[2] Nonetheless, the consequence is that the economic divergences between countries have been accentuated since the financial crisis, and with little sign of

[1] (Leigh, Daniel; Blanchard, Olivier J 2013)

[2] (Beck, Thorsten 2012, Elliot, DJ 2012)

improvement in future. In fact, the E.U. is in much worse shape economically than other first-world countries. Figure 1.1 shows the divergence in economic output following 2008, showing clearly that while some countries are in recovery, others have experienced a 'double-dip' recession and are still struggling to recover.

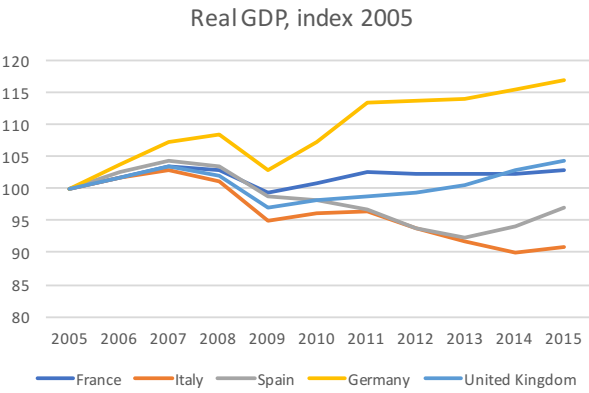

Figure 1.1: Real GDP of some E.U. countries 2005-2015. *Source: Eurostat*.

The E.U. has been further strained by the massive influx of migrants coming from the Middle East and Africa. This developed into a full crisis in the summer and early fall of 2015 with over 8,000 people landing on European shores each day.[3] As of June 2017, 1,688,755 migrants have reached Europe, according to the United Nations Human Rights Council, with several hundred thousand awaiting their chance to risk their lives crossing the Mediterranean Sea.[4] A further 14,379 migrants are known to have died or are missing in the Mediterranean since 2014, and there may be many others unreported.[5] Each year these numbers increase. The inrush of migrants seemed to have attenuated a little following a controversial agreement between the E.U. and Turkey in March of 2016 which effectively closed the Balkan route into Western Europe, yet the other main route, through Libya, may be picking up again as the season gets warmer. In fact, on the twenty-seventh of June, 2017, 12,000 refugees landed on Italian shores in the span of forty-eight hours.[6] While not posing a significant economic cost onto E.U. countries, this crisis has had strong political consequences. The E.U. has not been very forthcoming in providing aid to countries like Greece and Italy in their humanitarian efforts to rescue incoming boats, even when the leaders of these countries publicly called upon other countries for help. The E.U. operations to patrol its borders, namely Operation Triton through Frontex (the E.U. Border and Coast Guard Agency) reduced the area to be patrolled.[7] This may result in many more deaths in the Mediterranean that go unreported. Moreover, the recent problems regarding the redistribution of migrants across the twenty-eight member-states have further called attention to the E.U.'s ability to manage the crisis equitably.

This apparent failure of the E.U. in handling the aforementioned crises together has strongly influenced the rise of far-right and populist parties across the European continent, which can have a huge impact on local politics, and ultimately back to the E.U. Marine Le Pen (France), Geert Wilders (The Netherlands) and Norbert Hofer (Austria) all produced stunning political campaigns in 2016-2017, attaining record results and coming close to winning Presidential elections in their countries by running on anti-E.U. rhetoric and boosting citizens' fear of

[3] http://www.bbc.com/news/world-europe-34356758
[4] http://data2.unhcr.org/en/situations/mediterranean
[5] https://missingmigrants.iom.int/mediterranean
[6] http://www.repubblica.it/cronaca/2017/06/28/news/migranti_italia_ue_sbarchi-169383917/
[7] (European Commission 2016)

migrants. The Italian eurosceptic movement *Movimento 5 Stelle* has been on-and-off the largest party in Italy for the last few months. Several studies find that immigration was the major factor in the victory of the Brexit referendum the 26th of June, 2016. The decision to trigger Article 50 of the Treaty on the Functioning of the E.U. by British Prime Minister Theresa May therefore is the concretization of the populist wave, and reveals the danger it poses to the E.U.'s integration.

At this point, two overarching questions arise. Firstly, what is the direction of the E.U.? An apt metaphor is that of a reeling boxer— will the E.U. be able to shoulder the brunt of these crises and come out in one piece, or will they push it over? An important factor bearing on the outcome is whether the economic divergence between member-states is increasing or decreasing. Secondly, since any progress towards resolving these problems seems to be stagnating, could a new direction provide a solution?

This thesis will unfold in the following manner. Firstly, I will outline the possible paths ahead for the E.U., focussing in particular on the 'two-speed' Europe option because it appears to be the most likely, with cooperation envisaged in the areas of E.U. defense and border control. Given the disparate economic performances which characterizes the E.U., a multi-speed framework could be applied to the economic sector where countries freed from blanket E.U. policies can target economic policy to match performance. I describe in some depth the current, intrinsic, 'two-speed' framework that exists in the E.U. and identify some of the difficulties it has encountered (namely political will and a form of social pressure) that undermine its success, ultimately rendering it unconvincing. Instead, I develop a new approach based solely on economic performance by adapting the preexisting Proust Index devised by *The Economist*. The results reveal two groups of similarly performing E.U. countries, one that has recovered well from the economic crisis of 2007-2008 and the other that has not, and that the significant gap in performance between the two groups is increasing. This worsening imbalance suggests that urgent action needs to be taken whichever future E.U. option is followed.

1.2 BACKGROUND

The Brexit referendum outcome of June 2016 provided a strong impetus for the E.U.'s leaders to explore a new direction, especially in light of the growing support for anti-E.U. candidates in the Dutch, Austrian and French elections. In March of 2017, Jean-Claude Juncker, the President of the European Commission, published a White Paper in which he outlined five options for the future of the E.U. These include[8]:

I. simply continuing the current framework, accepting the at-times lack of ambition and will;

[8] (European Commission 2017)

II. a unwinding of E.U. integration by returning to focus solely on the single market: current policies on common employment and social standards, internal and external security cooperation, and cooperation within the eurozone are dropped along with any effort towards achieving these;

III. a major increase in integration for the entirety of the E.U. (minus the United Kingdom) by 2025;

IV. 'doing less more efficiently' by increasing cooperation for all members only in specific areas where more value can be gained such as defense, common foreign policy and border control, while maintaining or reducing it in others where not much more can be gained such as in the common currency or single market;

V. creating areas of disparate integration where countries voluntarily chose whether to integrate more in particular sectors.

The last of these, which entails the creation of a two-speed Europe, is the one which has been picking up the most traction. A revival of an old idea within the realm of E.U. studies, it was first raised towards the end of the 1980's by Germany Chancellor Helmut Kohl who is famously quoted for saying "the slowest ship in the convoy should not be allowed to determine its speed".[9] His thought became a 1989 proposal in which the then twelve European Community (EC) members would be separated into "concentric circles" around a core of the original six members.[10] However, it remained a proposal that never took off. A few years later, the prospect of Eastern Enlargement following the end of the Cold War, and the expected associated obstacles to decision making on the European level, gave new support for this idea. In a 1994 paper, prominent German Christian Democrats Wolfgang Schäuble and Karl Lamers argued that core countries of Europe should not be hindered by slower performing countries, but instead free to perform and in doing so the more powerful economies would exert a force on the periphery by pulling them up. Although this proposal is supposed to work in principle to the favor of both 'groups', it too did not take off. Since then the idea of a multi-speed Europe is mentioned very little both in economic and political science literature, and by E.U. leaders. Some, like former Italian and European Commission leader Romani Prodi, believe that it already exists within the E.U., albeit unofficially, and have been urging its official implementation for years.[11] Others, like Nobel laureate Joseph Stiglitz, have long argued for two different European currencies to better match the different economic performance of the eurozone countries.[12]

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[9] (Watts, Duncan 2008)

[10] (Mertes, Michael; Prill, Norbert J; Michael Mertes, Kurt Plück, Norbert J. Prill, Hans-Peter Schwarz und Werner Weidenfeld, 1990)

[11] http://www.ilsole24ore.com/art/notizie/2017-03-17/prodi-si-doppia-velocita-ma-senza-escludere-nessuno-115619.shtml?uuid=AExIpRo; http://www.repubblica.it/politica/2017/05/09/news/romano_prodi_dalla_francia_svolta_storica_merkel_non_decide_piu_da_sola_-165015437/; http://www.unita.tv/focus/prodi-leuropa-a-due-velocita-e-quello-che-volevo-sentire-brava-merkel/; https://euobserver.com/institutional/14575

[12] https://www.ft.com/content/dbbd151c-62f4-11e6-8310-ecf0bddad227?mhq5j=e2

Although a concerted effort to develop the two-speed proposal is lacking, multi-speeds are nevertheless implicit within the E.U. framework.

In 2017, several heads of state willing to strengthen E.U. integration have come out in support of a multi-speed framework, most notably Germany's Merkel,[13] Italy's Gentiloni[14] and France's Macron.[15] Belgium, Netherlands and Luxembourg too are in favor of such a measure.[16] However, the leaders of Finland,[17] Poland,[18] Czech Republic[19] and Hungary[20] are publicly opposed, feeling that it would significantly penalize those not part of the core group.[21] What is certain is that at this point there is currently no clear definition of how the multi-speed framework would be decided. So far, the rhetoric from E.U. leaders has been that two groups would be decided based on will, with those who want increased cooperation voluntarily banding together while those who want less Europe form their own group.[22] However, along this definition, the aforementioned countries are already part of one of the E.U.'s 'faster tracks' in terms of Economic and Monetary Union (EMU), the eurozone. In other words, the new 'increased integration' group would be made up by the same countries in which problems persist.

Furthermore, the E.U. legal framework already defines ways to form groups of increased integration within the E.U. One such way is called Enhanced Cooperation and was established by the Amsterdam Treaty of 1997. As the name suggests, this clause legally allows at least nine E.U. countries to integrate more in particular fields within the E.U.'s institutions. Another involves Opt-Out clauses that any member-state can use to avoid participating in a E.U. treaty or law if they are unwilling to integrate further. This means they can back out of E.U. treaties or laws without blocking it for the signatories, in essence creating a group with greater integration. While not directly used to form groups, it is an incentive for groups of countries to do so anyway since they know other countries can just opt out if unwilling. Therefore, it acts as a facilitator for the formation of groups, such as the two speeds proposal. This is the case with the fiscal policy coordination treaties external to the E.U. framework like the Stability and Growth Pact and the Fiscal Compact, the latter of which is currently in force and excludes the UK and the Czech Republic, and the Schengen Area which does not include the UK and Ireland. Finally, to a lesser extent the Mechanism for Cooperation and Verification can establish variable speeds within the E.U. This instrument kicks in if new or acceding states have not met certain standards regarding the internal market or 'area of freedom, security and justice' policies to help them attain these as quickly as possible. To do so, the Commission derogates related parts of the E.U.'s *acquis*

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[13] https://www.ft.com/content/725ec0bc-b091-11e1-8b36-00144feabdc0?mhq5j=e2&mhq5j=e2

[14] http://www.ansa.it/english/news/2017/03/10/multi-speed-eu-needed-says-gentiloni-2_56948c3a-7dc5-4136-87b0-93feb2aae11e.html

[15] http://www.euractiv.fr/section/elections/news/macron-assume-une-europe-a-plusieurs-vitesses/

[16] https://www.theguardian.com/world/2017/feb/14/plans-for-two-speed-eu-risk-split-with-peripheral-members

[17] http://www.politico.eu/article/juha-sipila-finnish-pm-against-junckers-two-speed-eu-scenario-white-paper/

[18] http://uk.reuters.com/article/uk-poland-eu-kaczynski-idUKKBN16R1NV

[19] https://www.theguardian.com/world/2017/feb/14/plans-for-two-speed-eu-risk-split-with-peripheral-members

[20] https://www.theguardian.com/world/2017/feb/14/plans-for-two-speed-eu-risk-split-with-peripheral-members

[21] https://www.theguardian.com/world/2017/feb/14/plans-for-two-speed-eu-risk-split-with-peripheral-members

[22] https://www.theguardian.com/world/2017/feb/14/plans-for-two-speed-eu-risk-split-with-peripheral-members

communautaire for the member-state in question until the requirements are satisfied. For example, if an acceding or new member-state has combustion plants as a part of their production chain, E.U. environmental policy can be abridged for a short time to allow the country time to transition away from them. Essentially, the Mechanism for Cooperation and Verification can act as a temporary Opt-Out clause. The maps in Figure 1.2 depict some of the areas of further integration that exist today.

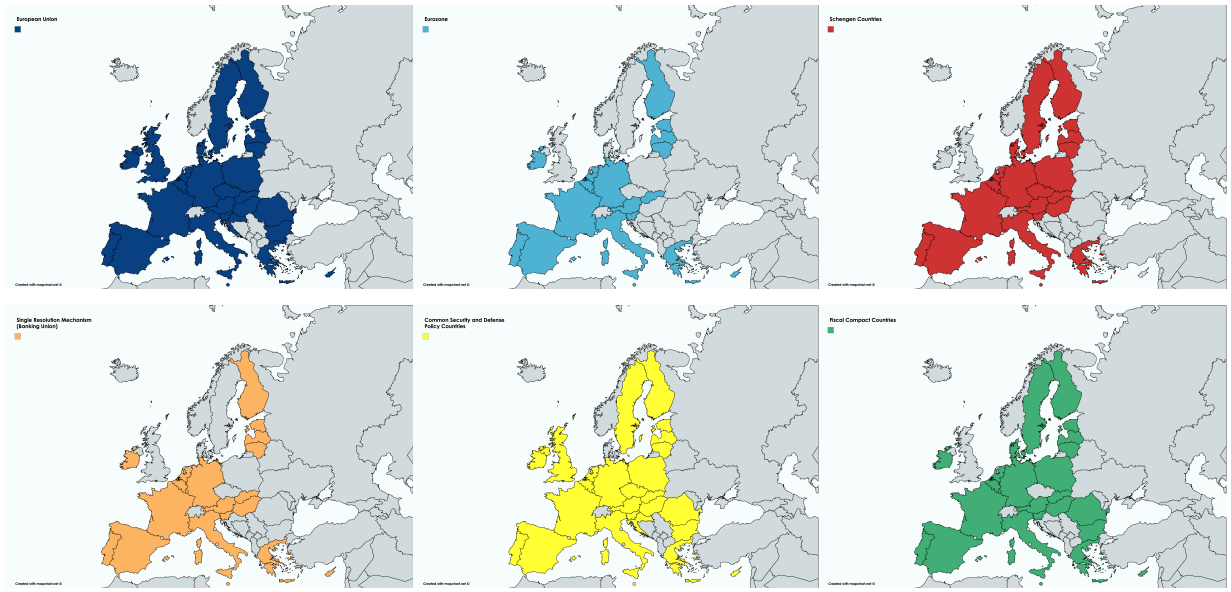

Figure 1.2: Maps highlighting the various intrinsic 'two-speeds' of the E.U. From the top, left to right, these are: the E.U., eurozone, Schengen Area, Single Resolution Mechanism (in the Banking Union), Common Security and Defense Policy, and Fiscal Compact countries. *Created with* MapChart.net ©

In theory, the current forms of enhanced integration seek to overcome the obstacles to integration posed by individual countries, but ultimately work in the long run to increase integration for the E.U. as a whole. This is done by promulgating the process that created the E.U. of today: Jean Monnet's Method. Embodying the neofunctionalist view in social science, Monnet's 'petits pas' approach achieves regional integration through functional spillover dynamics: an imbalance in a specific policy sector would be resolved only by more integration since going backwards would be more costly, which in turn would create another imbalance and so forth.[23] An example of this is the removal of tariffs for goods traded inside the European Economic Community (EEC) leading to a harmonization of national regulations and tax laws.[24] By allowing several countries to integrate more in a specific policy area, this creates regional imbalance than can only be settled with having the remaining countries join, as rolling back the integration would be costly in terms of credibility.

[23] (Moravcsik, Andrew 2005)

[24] (Moravcsik, Andrew 2005, Mansour, Nisreen 2011)

At the same time, these pre-existing ways to enhance cooperation within the E.U. have not been very successful, perhaps even harming the solidity of the E.U. and the success of Monnet's Method. Enhanced Cooperation has been used sparsely, touching only the areas of divorce laws,[25] international couples' property rights,[26] patents[27] and taxes on financial transactions.[28] In terms of Opt-Outs, this method can undermine E.U. integration by promulgating the notion of E.U. 'à la carte'. In other words, by allowing countries to avoid agreements which they do not want, including ones of major significance to the E.U., these modifications set a precedent for other countries and, in a way, defeat the purpose of the European community as countries freely only act in their favor. Thus, E.U. member-states can take into serious consideration pursuing policies that interest them rather than committing fully to E.U. integration. In the past, Ireland held a referendum regarding the Lisbon Treaty and initially voted against it.[29] On the second round of negotiations, however, the Lisbon Treaty was passed.[30] Similarly, the UK and Ireland have opted out of the Schengen Agreement,[31] and Denmark has opted out of any defense agreement.[32] These actions show that there is a significant political fracturing within the E.U.

One of the current forms of enhanced integration involves fiscal cooperation between twenty-six member-states of the E.U., and is essential for the proper functioning of the EMU. This is delineated by the Stability and Growth Pact and the Fiscal Compact. In their article *The Stability Pact: More than a Minor Nuisance?*, Barry Eichengreen and Charles Wyplosz highlight some of their advantages, including the prevention of inflationary debt bailouts, neutralizing inflationary pressure, offsetting political bias towards excessive deficits, internalizing international interest rate spillovers and encouraging policy coordination.[33] However, it is also widely recognized that these have not succeeded in their aims.[34] Eichengreen and Wyplosz argue that the Pact obstacles one of the most important, and inevitable reforms that the E.U. faces— pension reform. Considering the change in demographics in terms of increase in longevity and a reduction in birth rates throughout most European nations, the level of tax that is required to service these obligations would require governments to borrow more. However, the Stability and Growth Pact on paper binds signatory governments to keeping their budget deficits within 3% of GDP and public debt below 60% of GDP (after which point they become excessive), which would limit how much governments could meet the pension demand especially with less children being born that eventually pay taxes. Similarly, for countries with an already high deficit, such overarching fiscal policies could also prevent the full functioning of automatic stabilizers in

[25] (Council Regulation 2010)
[26] (Fabbrini, Federico 2015)
[27] (European Union 2012)
[28] (Council Of The European Union 2013)
[29] (Council of the European Union 2009)
[30] (Council of the European Union 2009)
[31] http://www.politico.eu/article/expanding-schengen-outside-the-union/
[32] (Danish Ministry of Defence 2016)
[33] (Eichengreen, Barry; Wyplosz, Charles 1998)
[34] (Mortensen, Jørgen Birk 2013)

times of economic downswing as these increase government deficits in the short run.[35] Furthermore, under the Pact the targets for public debt and deficits have been largely ignored. The compliance to the subsequent Fiscal Compact, which replaced and slightly expanded the scope of the Stability and Growth Pact, similarly failed as out of the twenty-five signatories only four adhered to the criteria.[36]

The associated enforcement mechanism, the Excessive Debt Procedure (EDP), was not enough to keep countries within the requirements: as senior researcher at the Centre for European Policy Studies, Jørgen Mortensen, puts it, the mechanism was originally only intended as a form of "effective peer pressure".[37] Sanctions under the EDP have never been exercised even while the majority of E.U. countries do not meet the required debt and deficit conditions. For example, in 2002 and 2003 Germany and France respectively were running budget deficits higher than the Pact would allow.[38] Even after the Council provided recommendations for reducing this and, seeing no change, proceeded to vote for sanctions, qualified majority was not met and thus these countries were not sanctioned.[39] Because of the enforcement mechanism's difficulties, while there may be a publicly manifested desire for fiscal cooperation, the results have been well below the goal.

In their article entitled *Fiscal Discipline as a Social Norm: The Stability Pact*, economists Jean-Paul Fitoussi and Francesco Saraceno bring up the very interesting notion of the ratification of the Stability Pact being just a public social norm that E.U. countries are compelled to follow to explain the aforementioned failures of the Stability and Growth Pact.[40] They take a view from social psychology according to which the need for social acceptance determines individual behavior. Because of this necessity, a tendency to conform emerges and is reinforced both by the risk of punishment in case of deviation and by a social context in which other people comply. More to the point, this view posits that people may follow social norms even if it is against their best interest as long as the gain in reputation is greater than the cost they suffer. In other words, they 'force' themselves into a sub-optimal equilibrium with constraints on behavior. A very simple paragon in economics can be seen in firms choosing to pay wages greater than the market-clearing wage because the cost is outweighed by the negative impact to their reputation that hurts their ability to attract essential workers. According to Fitoussi and Saraceno, this works just as well to describe the behavior of E.U. countries. The authors explain that the E.U. institutions and decisions are the outcome of bargaining, or consensus-building, between different governments. If a country wanted to push some negotiation, its bargaining power depends on its credibility: an integral part of its reputation. Not adhering to agreements like the Stability and Growth Pact would naturally erode their reputation with the other member-states and thus make it much harder for them to negotiate successfully in the future. This theory is

[35] (Eichengreen, Barry; Wyplosz, Charles 1998)

[36] (European Commission 2016)

[37] (Mortensen, Jørgen Birk 2013)

[38] (Mortensen, Jørgen Birk 2013)

[39] (Mortensen, Jørgen Birk 2013)

[40] (Fitoussi, Jean-Paul; Saraceno, Francesco 2008)

confirmed by the weak EDP punishment where the Council can only resort to verbal reprimands. Fitoussi and Saraceno conclude therefore that any attempts to follow the social public norm are dictated by a fear of the potential social costs— by social recognition. The threat itself makes it rational for E.U. countries.

Within the current framework, Firoussi and Saraceno's research suggests that the currently available measures to expand coordination may be less efficient in reality than on paper as countries feel a pronounced pressure when deciding whether to opt out of a policy or to take part in enhanced cooperation. Furthermore, within a two-speed Europe framework based on a will to integrate more, Fitoussi and Saraceno's research casts significant doubts on the freedom that countries have in their choice to be part of a specific group compared to the alternative. In other words, if such a significant pressure distorts decisions, a sub-optimal arrangement will be achieved as all countries would feel forced to join the faster group for fear of losing bargaining power compared to the stronger economies. Were this to happen, such a two-speed Europe would not have the proper economic or political grounds to exist, impeding the appropriate solutions to be applied to the E.U. member-states' divergent problems and would likely remain unstable in the long term.

Another example of weak political commitments that the E.U. faces involves its budget, which stands currently at 1.24% of E.U. Gross National Product.[41] This sum is set by the Multiannual Financial Framework, and any movement to increase it has been met with insurmountable obstacles.[42] Several studies have shown that this sum is well below what would be needed for the E.U. to have any real impactful policies.[43] Although member-states expect the E.U. to undertake certain projects, any step towards more supranationalism is met with strong resistance, especially in times of economic uncertainty and political turbulence. The E.U.'s initiatives are also at times met with strong dissent. This is particularly the case for matters on economic policy today, as the prolonged crisis wears down on people's determination to stick with concerted policies like the single currency. The rise to prominence of eurosceptic political parties testifies this (Le Pen and the *Movimento 5 Stelle* have both promised referenda on leaving the eurozone in 2017 which, regardless of how serious they are, garner significant support in their constituencies[44]). This potentially narrows the scope of sectors in which a two-speed framework could be established politically. Nevertheless, the diverging economic necessities of E.U. countries could be met with a two-speed (or multi-speed) structure, and the prospect of coordination between objectively similarly performing countries may make this easier to achieve and potentially overcome the political problems mentioned above.

At the same time, the idea that many of the same member-states who are already part of more-integrated groups within the E.U. would want to form a new, 'further integration' bloc based on

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[41] (Cipriani, Gabriele 2014)

[42] (Benedetto, Giacomo; Milio, Simona 2012)

[43] (Benedetto, Giacomo; Milio, Simona 2012)

[44] http://www.lastampa.it/2016/12/08/italia/politica/di-battista-ms-vogliamo-un-referendum-sulleuro-BF20xZLJmONT1shm2ZcWdM/pagina.html; http://www.leparisien.fr/flash-actualite-economie/sueurs-froides-face-a-la-sortie-de-l-euro-promise-par-le-pen-23-03-2017-6789189.php

will alone does not seem practical. This is particularly the case if one considers the economic stagnation that is characterizing Europe and, more importantly, the increasingly pressing need to resolve this through uniform policies amidst significantly different (and diverging) economic performance. Perhaps these are the criteria that should be considered in a potential two-speed (or multi-speed) economic structure. In fact, if the point of this policy is to overcome the economic crisis, the decision of membership in one group or the other should be based upon that and not signify a lacking commitment to the European project. Rather, similar economic conditions that would lead to a newfound stability through appropriate policies should form the background of such a definition as anything else would maintain the current disequilibrium that is exacerbating divergences.

Without question, any form of modifying the European Union's framework holds large economic, social, political, practical and bureaucratic consequences. If a two-speed solution were to fail, the uncertainty in financial markets may raise large opportunity costs that may very well not be recovered, resulting in a massive crisis of identity and of confidence in the E.U. and its institutions, and possibly a renewed economic recession. Such failure would very likely signal the end of the E.U. Furthermore, the political debate for such a policy, which would be intrinsic to the decision being taken in the first place, would be immense as twenty-eight (soon twenty-seven) countries attempt to reach a unanimous agreement. How could member-states tell each other which group they think others should be in? Similarly, if one takes Fitoussi and Saraceno's argument, the fear of losing bargaining power would distort the process in which countries make objective decisions on their own future. Objective economic criteria would be met head-on by political expectations which may make an evidence-based two-speed Europe more theoretical than realistic. Nevertheless, it could be that the prospect of a coordination based on similar countries would make this easier to achieve and potentially overcome the political problems mentioned above. If such a project were to be considered, evaluated and ultimately adopted as a potential solution to the aforementioned problems engulfing the E.U., a tangible and concrete definition mechanism needs to be determined. The scope of this thesis is to provide such a definition, which stems from specific findings and subsequent reasonings in time-series macroeconomic data about E.U. member-states.

2.0 PROUST I INDEX

2.1 PROUST INDEX

In February of 2012, the British economics and finance weekly magazine *The Economist* published the results of a study quantifying the effects of the recent financial crisis. At the time, some advanced countries were beginning to slowly climb out of the recession, but the consequences had been so negative for others that no one was quite sure of the severity. The authors of the article devised a simple, yet comprehensive way to compare their day's economy to the past. The metric, years lost, determines the name of this index by harking back to French novelist Marcel Proust's famous novel *À la recherche du temps perdu* (In search of lost time). It is a particularly effective choice as it is easily understandable, and, more importantly, universal, allowing for straightforward comparisons between countries without having to recur to price indices or anything else which may distort data. This feature makes the so-called Proust Index unique, allowing for some profound findings.

The Proust Index matches a specific national parameter from a given year to its past values to see how it compares. It asks the following questions: does this year's value suggest progress? Or, is there a time in the past when this value occurs, meaning that the country has regressed in between? If the former is true, then the country has improved on its past in the specific parameter. Instead, if the latter is the case, then any progress in between is essentially lost regardless of whether the trend is recovering (this is an important point which will be touched upon later). More specifically, starting from a specific 'year zero', the number of years counting backwards until the starting value is matched by a value in the past are added up. Because the role of *The Economist*'s article is to use the Proust Index to calculate the effects of the crisis for its modern day, their 'year zero' is 2012 (when the article came out). However, this Index can be based on any year. Among every parameter used and for most countries, a slowdown occurs following 2008. Countries then take different amounts of time to recover, and some even continue to worsen. In either case, recovery or lack thereof for each parameter is captured by the Proust Index in the form of years lost. To get its final value, the total amount of years lost per country is then divided by the number of parameters, thus giving an overall evaluation of at what

year the economy is operating at. In their study, *The Economist* takes its data from the OECD's statistical database.

The seven variables that make up the Proust Index include: the value of housing, financial assets held by households, household wealth, household expenditure, wage levels, annual output and unemployment. The first five largely dictate living standards in their own way and also determine the demand for goods and services through their impact on people's consumption choices. Annual output in real terms, on the other hand, quantifies the total production of an economy. If measured in real terms and by taking into account population growth, GDP it can also be used to examine the progression of living standards. Unemployment also influences standards of living, and is a consequence of the demand for goods that will cause firms to adjust their employee counts. In its entirety, the Proust Index's parameters encompass a wide range of the overall economy. A detailed description of these, and their impacts, follows.

2.2 DESCRIPTION OF DATA

2.2.1 Household Wealth

In its all-encompassing form, household wealth aggregates measures of income, inter-generational transfers, and any kind of asset held by the household, whether financial or physical (such as property) to measure economic wealth of households within a country. Essentially, this parameter reports the extent of domestic richness. However, household wealth can be simplified around two measures: the property price of a household's main residence (HMR) and the total amount of financial assets held by them. This is because they are the largest components of domestic portfolios and are relatively easier to measure (albeit not without problems).

Household wealth impacts the economy in four main ways. Firstly, it determines consumption expenditure. As income and gains from any held assets increase, household wealth also increases. Spending and saving consequently increase as people have either more money available or have a smaller proportion of their wealth tied to things like loans, healthcare or education. Furthermore, higher wealth also gives households a more comfortable lifestyle as they can afford to spend more, and on a wider range of goods including private healthcare, higher education and comfortable retirement. The entire economy benefits as aggregate demand for goods and services increases: as businesses face higher demand for their goods they may hire more workers, decreasing unemployment; and government receipts increases from higher sales tax revenue and lower spending on unemployment benefits. Wealthier

households are also better equipped to resist periods of economic instability or downturn.[45] The second way in which household wealth impacts the economy regards the effect a change in asset prices (including those held by households) has on the demand for investment through the *Tobin's Q* effect. This theory posits that an increase in asset prices decreases the cost of capital, thus increasing investment demand.[46,47] Finally, higher household wealth instills confidence in private expenditure.[48]

2.2.2 House Cost

In a 2014 study for the European Central Bank titled *Household wealth in the euro area: The importance of intergenerational transfers, homeownership and house price dynamics*, economists Thomas Y. Mathä, Alessandro Propiglia and Michel Ziegelmeyer study the impacts of one of the two main components of household wealth on the economy. Their research looks at three particular factors for wealth accumulation — home-ownership, housing value increases, and intergenerational transfers — and their effect on the marked differences of household wealth across the euro area (and the E.U. as a whole). The authors find that a vast majority of households in the euro area own a house. The highest percentage is in Slovakia (90%), followed by Spain (83%) and Slovenia (82%). Only Germany (42%) and Austria (48%) are below 50%.[49] For the vast majority of European homeowners, the value of their HMR accounts for around 50% of their household wealth portfolio, thus making it their most valuable and important asset.[50]

Homeownership is an important asset for the vast majority of people in the euro-area. The government provides significant incentives to own a house through subsidies and tax-deductible interest-rate payments on mortgages, thus facilitating acquisition. More to the point, housing prices generally appreciate since land prices predominantly increase over time, thus making owning a house a rather safe source of capital gains in the long-run. This is compounded by the fact that housing is relatively low-risk in terms of shock exposure.[51] All of this contributes to making housing a more attractive option compared to financial investments which can be more volatile and more complicated to manage. The authors also find that house appreciation is especially important in countries where government pension plans are low or at risk of being reduced. Therefore, house ownership becomes a crucial aspect for household economic stability and for making sure living standards are decent over the long-term. Controlling for

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[45] (Organisatie voor Economische Samenwerking en Ontwikkeling 2013)

[46] (Brainard, W. C.; Tobin, J. 1968)

[47] (Sousa, Ricardo M 2009) Furthermore, as wealth increases the price of collateral also increases, which positively affects companies' and households' balance sheets. This is also known as the credit channel. Investment risk and adverse selection are subsequently lessened.

[48] (Sousa, Ricardo M 2009)

[49] (Mathä, Thomas; Porpiglia, Alessandro; Ziegelmeyer, Michael 2014)

[50] (Mathä, Thomas; Porpiglia, Alessandro; Ziegelmeyer, Michael 2014)

[51] (Mathä, Thomas; Porpiglia, Alessandro; Ziegelmeyer, Michael 2014)

income and any kind of transfer, the study finds that a German household that acquired their HMR in 2000 had a 9.2% higher median net wealth in 2014.[52] Similarly, albeit at a significantly slower pace, an Italian household that acquired their HMR in 1990 had a 6.2% higher median net wealth wealth in 2010.[53] Another study by economists Christopher D. Carroll, Misuzu Otsuka, and Jirka Slacalek, measures the effect housing wealth (property price) has on aggregate consumption to be two cents on a one dollar change in the short term, and nine cents in the long term.[54] In other words, as housing wealth increases by one dollar, consumption increases by two cents in the following quarter and by nine cents in the long term.

As house ownership can provide significant benefits through its appreciation, a depreciation can have opposite, and potentially catastrophic, consequences. Furthermore, since around half of households' wealth portfolios are tied up in the cost of the house, if a depreciation were to occur while the rest (i.e. financial assets) increase or stay the same, a greater proportion of their wealth is tied up in less safe assets. Thus, a larger part of their economic well-being becomes at-risk during economic downturns. For example, when financial asset prices decrease as a consequence of a recession, households whose assets were less at risk should maintain a greater level of wealth. They would be able to sell their house without too big of a cost while any financial asset they sell will have lost more. However, if this ratio is inverted and the value of the house instead makes up a smaller percentage of wealth, then households are much more at risk of losing a larger portion of wealth during economic downturns. Were household wealth to fall, negative effects along the aforementioned four channels to the economy would be triggered. This becomes particularly problematic in the case of a confluence of other negative macroeconomic conditions such as decreases in real wages or increases in unemployment and government debt.

2.2.3 Financial Assets

In another European Central Bank Working Paper from 2009, economist Ricardo M. Sousa examines the individual impact of financial wealth (financial assets minus liabilities, excluding mortgages) on consumption expenditure. Just like for the Proust Index, my thesis will focus on the asset part of the financial balance sheet of households only, which encompasses currency and deposits, shares in equity and investment funds, pension funds and life insurance according to Eurostat, the European Commission's Statistics Agency. In a 2009 working paper entitled *Wealth Effects on Consumption*, Ricardo Sousa, an economist for the European Central Bank, finds that financial assets are consistently much greater than liabilities, across both time and the E.U.'s member-states. In fact, the proportion of financial assets out of total financial assets and liabilities has been on average 75% for the E.U. as a whole since 2000.[55] Among the member-

[52] (Mathä, Thomas; Porpiglia, Alessandro; Ziegelmeyer, Michael 2014)

[53] (Mathä, Thomas; Porpiglia, Alessandro; Ziegelmeyer, Michael 2014)

[54] (Carroll, Christopher D; Otsuka, Misuzu; Slacalek, Jiri 2011)

[55] (EUROSTAT 2017)

states this ranges from a minimum of 62% in Ireland to a maximum of 84% in Belgium (Figure 2.1).[56] So, an increase by one euro in financial assets will raise financial wealth by 0.75 euros, liabilities held constant.

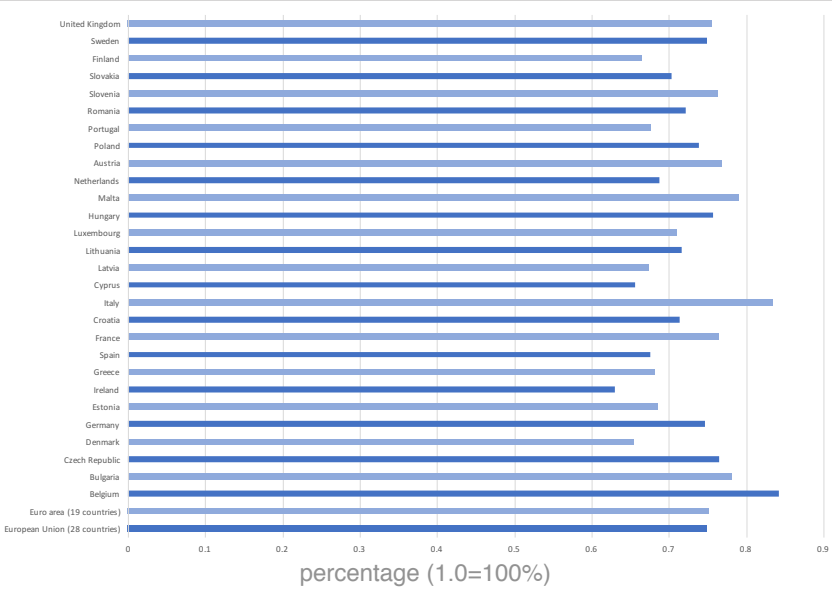


Figure 2.1: Average financial assets as a percentage of total financial assets and liabilities from 2005-2015 in the E.U. *Source: Eurostat.*

Consistent with several other studies, Sousa finds the effect of financial assets on aggregate consumption to be greater than that of housing wealth. Conducted in a similar fashion to the housing wealth studies mentioned above, the author measures the marginal propensity to consume from an increase in financial assets of one euro to be around 3.5 cents.[57] This is confirmed by economist Frauke Skudelny in a study published in 2009.[58] Put another way, a 10% increase in financial asset wealth leads to a consequent consumption increase between 0.6% and 1.5%.[59] The author also finds that consumption is particularly sensitive to financial liabilities, the other aspect of the financial balance sheet. This last observation ties directly into the discussion on the risks of greater vulnerability of wealth mentioned above: the more household wealth is exposed on financial markets, the greater the potential effect on consumption.

At the same time, there is some controversy regarding the impact of certain financial assets held by households on investment demand (the Tobin's Q effect mentioned above). In particular, Stephen Wright, an economist at the University of London's Birkbeck College, finds that the calculation of Tobin's Q (the ratio between the tangible asset market value of a firm, which is made up of employment, physical capital, inventory and property, and the replacement value of these)[60] cannot include any non-residential fixed asset held by households.[61] Namely, this means that their impact on investment demand is reduced. Nevertheless, financial assets remain an important source of wealth for households and a barometer of economic health.

[56] (EUROSTAT 2017)
[57] (Sousa, Ricardo M 2009)
[58] (Skudelny, Frauke 2009)
[59] (Sousa, Ricardo M 2009)
[60] (Brainard, W. C.; Tobin, J. 1968)
[61] (Wright, S. 2006)

2.2.4 Household Expenditure

Household expenditure, also called consumer spending, is one of the most important components of GDP. It measures the final spending by households on goods and services to satisfy individual and family needs, along with those of members of their community.[62] A decrease in consumption spending can have immediate negative consequences on the economy through the form of slowed economic growth. In particular, as consumption decreases, the demand for these goods and services decreases and so prices will fall, also known as deflation. In theory, were this the case consumption would slow down even more as people anticipate lower prices and so wait to spend, thus resulting in a negative spiral. The subsequent drops in production would lead firms to hire less people, and those remaining without a job would need unemployment benefits. However, government revenue would also suffer as tax revenue on consumption decreases, making it harder for them to meet this new need. If decreased consumption occurs for two quarters in a row, the economy would be considered to be in a recession. Conversely, if household expenditure were to significantly increase and consumer demand is greater than what firms can produce, this would in theory result in an increase in price, or inflation. Similarly to above, people would consider future prices, which in this case would be higher, and so would spend more currently. As aggregate demand increases further, prices would increase even more and another type of spiral occurs. These threats are what drive central banks' mandate to contain inflation.

It is unclear whether *The Economist* use nominal or real data for household expenditure. I decided to use nominal data because, as was the case with total financial assets parameter, a specific deflator was not included in the dataset.

2.2.5 Wages

Wages are an intrinsic component to the labor market. They determine firms' demand for workers and also workers' supply of their time. They also contribute to the amount of disposable income that households have to spend or save. In real terms, an increase in wages leads to higher purchasing power and thus better standards of living, on average. Rising real wages lead to more spending, and the positive impacts mentioned above occur. The government subsequently gains higher tax revenues from more sales, thus decreasing its necessity to borrow and its deficit spending. Wages are also a indicator of competitiveness (in addition to the cost of capital, productivity and innovation) in that they are the largest cost to the firm[63] — lower wages lead to cheaper production costs and thus more competitive goods.

[62] (Eurostat 2016)

[63] (Stuchlik, A. 2015)

On the other hand, a decrease in wages could carry an important role for reducing macroeconomic imbalances and resolve problems in other sectors, at least in theory. The main idea behind this, internal devaluation, is one of the underlying tools that the eurozone has to minimize growth divergences now that countries no longer have control of their monetary policy. It posits that competitiveness vis-à-vis other countries can be boosted by having individual deficit countries unilaterally decrease their unit-labor costs (of which wages form the largest part). As a consequence, these countries' goods will be more competitive and thus their market share will increase, restoring growth. This is especially important for countries that depended greatly on currency devaluation prior to the euro such as Italy, Greece and Spain. In order for internal devaluation to work fully, countries doing well need to also increase their wages and make their goods less competitive, and so give up some of their market share to deficit-countries. A 'flexibilitization' of labor markets that allows firms to easily lower and raise wages in all of the eurozone is integral to this neoliberal theory. Much research has come out recently that challenges this theory and its likelihood of resolving the eurozone's divergences.[64]

2.2.6 Unemployment Rate

The unemployment rate measures the percentage of people old enough to work that are not currently employed (in the last reference week), are actively looking for employment and that are available to work starting within the next two weeks, out of the entire workforce (which includes employed and unemployed people).[65] In 2015, it was significantly higher in the E.U. (9.39%) than in the US (5.29%), and since then the gap has largely remained the same.[66] The economic significance of unemployment is twofold: firstly, unemployed people gain no income, reducing their living standards and their expenditure; and secondly, the government offers benefits to help maintain unemployed people while also raising no tax revenue from them in terms of income tax. Being unemployed also eliminates contributions to pensions and social security. If workers are unemployed for an extended amount of time, such as half a year, a United States Federal Reserve study shows that income will be less thirty years later.[67] Similarly, being unemployed also impacts people's ability to own a house in the future.[68]

Interestingly enough, a study shows that in Portugal and Greece, a high unemployment rate could have induced a short run positive effect by lowering wage inequality.[69] While decreasing wage inequality through increasing unemployment is most likely not a desired course of action, this is nonetheless important because wage inequality is found to have a significant impact on

[64] (Armingeon, Klaus; Baccaro, Lucio 2012, De Grauwe, Paul 2012)
[65] (Eurostat 2016)
[66] (OECD 2016)
[67] (Cooper, D 2014)
[68] (Cooper, D 2014)
[69] (Dreger, Christian; López-Bazo, Enrique; Ramos, Raul; Royuela, Vicente; Suriñach, Jordi 2015)

growth (more on this in Chapter Three), and the E.U. countries that have high unemployment rates are also having problems with growth.

2.2.7 Annual Output

Finally, the most common way to measure annual output is through Gross Domestic Product (GDP). This parameter computes the total value of all final goods and services produced in a country in a given period. In nominal terms, the annual prices of the final goods and services are those of the current market value, while in real terms a base year's prices are used for each basket of goods and services. Both of these have different draws. Nominal GDP, which includes inflation, can convey other viewpoints such as debt sustainability: debts are set in a passed time so economic growth and inflation contribute to its future value. Real GDP instead isolates annual output from changes in prices through a specified deflator, thus focusing on the changes in production over time. At the same time, it is important to note that neither voluntary household work nor the adverse impacts of economic activity, such as negative externalities on the environment, are included in the GDP measure. This makes the annual output parameter marginally incomplete, but overall it is comprehensive enough to capture differences over time in annual output.

When real GDP increases, firms tend to hire more workers, who have more money to spend or save, and unemployment decreases. Conversely, when real GDP decreases the opposite occurs.

2.3 METHODOLOGY

In order to see how much progress countries have made since 2012, an updated version of the Proust Index was needed. However, given the expanded role it would have in informing the separation of countries into potential groups in a two-speed Europe based on economic performance, I implemented a few minor changes, both in variables and in methodology. To begin, the data used came from another source, Eurostat, rather than the OECD's statistical database. This is because the latter does not include data for several E.U. member-states, and in this thesis I look at the entirety of the E.U. as opposed to just advanced economies. Furthermore, the household wealth parameter was dropped because its aggregates – house cost, financial assets held by households and real wages – make up such a large percentage of it (see above for further description). In the original Proust Index article, it is unclear how annual output was measured. For the sake of the updated index, annual output is covered amply by GDP in real terms. While interesting on its own, nominal GDP's interpretation on debt sustainability alone does not complete the debt sustainability dimension, so it was omitted. The

article similarly does not explain how to deal with volatile data during the years of the crisis when measuring years lost. In other words, simply finding the first prior year where the same value is found and calculating the difference with the 'year zero' may betray the fact that more progress occurred before and should be counted. This refers to double-peak (or double-minimum in the case of unemployment) situations where the first peak essentially hides the second. As such, an element of qualitative analysis through actively choosing to skip this volatility and look back to pre-2007 is needed to capture the real amount of years lost.

Because of missing data, part of Romania's and Poland's time series on the value of houses were modeled based on other countries' performance. To do so, I looked at all other countries in the same dataset who had the same value at the same year and averaged the number of years it took them to get there from what the 'year zero' value was. Each average was comprised of several member-states geographically spread across the E.U.

To account for these changes, I devised a new version of the Proust Index, from now on called 'Proust I Index', which also used 2012 as a 'year zero'. The most consistent recent data from Eurostat dates to 2015, so this was the other year for which years lost were calculated to see whether countries progressed or regressed. The updated and expanded role of the new Proust I Index requires a metric to differentiate countries. The original Proust Index just looks at years lost without considering whether trends are improving or not. For example, a country that, according to the Proust Index, has lost several years in one parameter due to a significant initial deterioration, but whose trend into 'year zero' is improving, cannot be considered the same as another country who has the same number of years lost, but which reached the 'year zero' level after steadily worsening. In other words, relying solely on years lost as a metric can give an inaccurate representation of countries' performance and so, within a context of forming groups, would be misleading. Similarly, a country that has relatively constant data can experience several years lost due to a small worsening. While this may be contrary to its historical trend, it does not entail the same gravity as another country that has lost much more actual progress.

For this, a specific process was devised to understand the divergent macroeconomic performance within the E.U. Eventually to be separated into two groups, countries' behavior was ranked into six different categories which took into consideration the amount of years lost first, a comparison with the E.U.'s average for that parameter second, and finally compared the percentage change over the 2012-2015 period. The categories ranged from:

I. Dark green (best performance): 0 years lost in 2015, 2015 value significantly better than EU28 average, comparatively very strong growth
II. Light green (good performance): 0 or close to 0 years lost in 2015, 2015 value better than EU28, comparatively strong growth
III. Light blue (borderline tending towards green countries' performance): comparatively few years lost, around EU28 average but positive growth trend: not concerning
IV. Dark blue (borderline tending towards red countries' performance): comparatively few years lost, around EU28 average but negative growth trend: concerning

V. Light red (bad performance): comparatively numerous years lost, lower than EU28 average, negative growth trend

VI. Dark red (worst performance): comparatively most years lost, lower than EU28 average, negative growth trend

These steps contribute to comprehensively extrapolating the divergences within the countries' data, grounding the separation of countries based on performance in quantitative analysis. Ultimately, the classifications across parameters are summed to get a final grouping.

2.4 FINDINGS

The findings of the Proust I Index were strong. The table for years lost is reproduced in Figure 2.2, along with some simple statistical analysis.

These results show that in 2012 the distribution of years lost is rather normal. The bin size, three, represents the size of the data and the range of years lost well. The standard deviation in 2012 is under three, with a mean and median of lost years around four and a half countries. The maximum amount of years lost occurred in Greece with 10.33 years, followed by Portugal (9.67), Spain (8.33), Ireland (8.17) and Italy (7.0). At the other end of the spectrum, the best performers were Germany, which lost none, along with Austria and Malta (0.83 years each), Belgium (1.17), Slovakia (2.17), and Finland, Luxembourg and Bulgaria (2.5 years each). The Czech Republic, Estonia, France, Poland, Lithuania and Sweden also performed comparatively well, losing less than both the mean and the median. However, above the median lie seventeen countries, more than half of the E.U. In particular, the PIIGS countries (Portugal, Ireland, Italy, Greece and Spain) fair the worst. Compared to *The Economist*'s original Proust Index findings, the Proust I Index's 2012 results are largely similar. Germany remains the country with the least amount of years lost (at three), and Greece the one with the most years lost (fourteen). Spain's lost economic time (eight), along with Portugal's (slightly under ten) are confirmed.[70] A few countries' values were slightly higher, such as for Italy, the United Kingdom and Ireland (eight, eight and nine, respectively).[71] Some of the differences could be traced back to the different dataset, the omission of the household wealth variable, and the focus on real GDP. Overall however, the comparison between the two is quite good.

For 2015, some important changes appear. To begin, the Proust I Index's results approximate a normal distribution to a lesser extent. With more data and maybe a more sophisticated model for selecting the bin size (the same one as above is used), perhaps the distribution would be smoother. Nevertheless, given the sample size, it is still somewhat normal. The standard

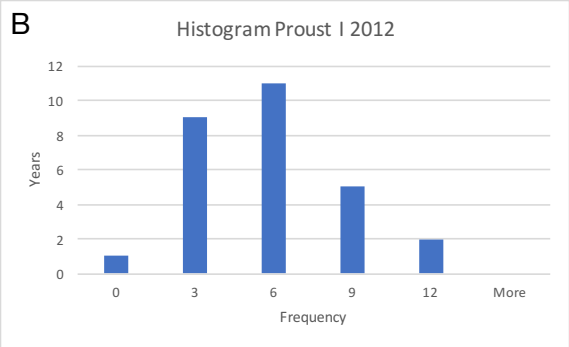
[70] http://www.economist.com/node/21548255

[71] http://www.economist.com/node/21548255

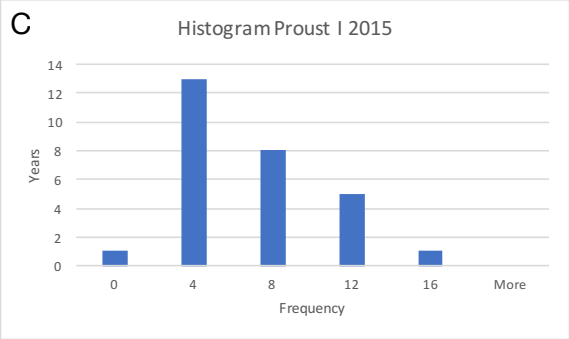
A

Country	2012	2015
Austria	0.83	2.83
Belgium	1.17	1.83
Bulgaria	2.50	2.67
Croatia	6.00	8.50
Cyprus	4.50	9.67
Czech Rep.	2.83	1.83
Denmark	5.50	6.33
Estonia	3.50	4.17
Finland	2.50	5.67
France	4.17	5.83
Germany	0.00	0.00
Greece	10.33	14.67
Hungary	6.33	5.17
Ireland	8.17	6.67
Italy	7.00	10.33
Latvia	5.00	2.83
Lithuania	4.50	2.83
Luxembourg	2.50	3.33
Malta	0.83	1.33
Netherlands	4.83	7.00
Poland	2.33	2.67
Portugal	9.67	10.83
Romania	5.67	3.83
Slovakia	2.17	2.67
Slovenia	5.33	7.00
Spain	8.33	9.17
Sweden	3.50	1.67
U.K.	6.33	2.50

B



C



D

	2012	2015
Std. Dev.	2.62	3.44
Mean	4.51	5.14
Median	4.50	4.00
Max	10.33	14.67
Min	0.00	0.00

Figure 2.2: Proust I index using 2012 and 2015 base years. **A**. Proust I Indices; **B**. Histogram Proust I '12 distribution; **C**. Histogram Proust I '15 distribution; **D**. Proust I Index statistics. *Source: Eurostat.*

deviation increases to 3.67, meaning that there is a wider spread of data. The mean also increases to over 5, yet the median decreases to 4.08. This suggests that some countries have lost quite a few more years. In fact, the range increases from a minimum 0 (Germany) to a maximum of 14.67 (Greece). Several countries worsened, such as Croatia (losing 2.5 more years to a total of 8.5) and Cyprus (lost 5.3 more years to 9.8), which lost more than any other E.U. country. The PIIGS countries continued to worsen. On the other hand, the UK (down four years to 2.5) improved significantly, placing as one of the best performing countries after being largely above the E.U. mean in 2012. Finland had the opposite path as it lost 3.5 more years (up from 2.17 to 5.67), going from largely below the 2012 E.U. average to above it in 2015, especially the median. To a lesser extent, Sweden, Latvia and Lithuania exhibited a modest recovery of around two years. Given the economic stagnation following 2012, countries may have had a hard time recovering since there was virtually no growth. A simple grouping from the 2015 Proust I Index results, where countries are divided based on whether there was a recovery

from 2012's level and total years lost (threshold at a comparatively low 3.5), would yield the following:

Improved:	**Worsened:**
Austria; Belgium; Bulgaria	Croatia; Cyprus; Denmark
Czech Republic; Germany; Estonia; Hungary	Finland; France; Greece
Latvia; Lithuania: Luxembourg; Malta; Poland	Ireland; Italy; Netherlands
Romania; Slovakia; Sweden; United Kingdom	Portugal; Slovenia; Spain

However, to be more precise, a look at the individual parameters is necessary (see Figures 2.3 and 2.4).

REAL HOUSE COST

A Country/ years lost	2012	2015
Austria	0	0
Belgium	0	0
Bulgaria	7	10
Croatia	8	12
Cyprus	9	12
Czech Rep.	5	8
Denmark	8	10
Estonia	7	9
Finland	2	9
France	6	9
Germany	0	0
Greece	11	17
Hungary	10	12
Ireland	14	15
Italy	8	14
Latvia	8	10
Lithuania	8	10
Luxembourg	0	0
Malta	5	8
Netherlands	12	15
Poland	8	9
Portugal	17	20
Romania	10	14
Slovakia	6	9
Slovenia	6	10
Spain	9	14
Sweden	0	0
U.K.	8	7

FIN. ASSET HELD BY HH

B Country/ years lost	2012	2015
Austria	0	0
Belgium	0	0
Bulgaria	0	0
Croatia	0	0
Cyprus	0	8
Czech Rep.	0	0
Denmark	0	0
Estonia	0	1
Finland	0	0
France	0	0
Germany	0	0
Greece	13	16
Hungary	0	0
Ireland	0	0
Italy	7	9
Latvia	0	0
Lithuania	0	0
Luxembourg	0	0
Malta	0	0
Netherlands	0	0
Poland	0	0
Portugal	2	0
Romania	6	0
Slovakia	0	0
Slovenia	5	0
Spain	7	0
Sweden	0	0
U.K.	0	0

REAL WAGES

C Country/ years lost	2012	2015
Austria	0	0
Belgium	0	1
Bulgaria	0	0
Croatia	5	7
Cyprus	1	7
Czech Rep.	0	0
Denmark	0	0
Estonia	0	0
Finland	0	0
France	0	0
Germany	0	0
Greece	5	11
Hungary	0	0
Ireland	0	0
Italy	0	0
Latvia	0	0
Lithuania	4	0
Luxembourg	0	0
Malta	0	0
Netherlands	0	0
Poland	0	0
Portugal	4	7
Romania	0	0
Slovakia	0	0
Slovenia	0	0
Spain	0	0
Sweden	0	0
U.K.	0	0

Figure 2.3: Proust I Index findings in years lost for 2012 and 2015 for the Real House Cost, Financial Assets Held by Households and Real Wage parameters individually. *Source: Eurostat*.

HH EXPENDITURE

D Country/ years lost	2012	2015
Austria	0	0
Belgium	0	0
Bulgaria	0	0
Croatia	5	8
Cyprus	0	6
Czech Rep.	1	3
Denmark	0	0
Estonia	0	0
Finland	1	0
France	0	0
Germany	0	0
Greece	7	11
Hungary	5	8
Ireland	7	7
Italy	1	4
Latvia	5	0
Lithuania	5	0
Luxembourg	0	0
Malta	0	0
Netherlands	4	0
Poland	0	0
Portugal	5	5
Romania	5	0
Slovakia	0	0
Slovenia	1	6
Spain	5	8
Sweden	0	0
U.K.	7	0

UNEMPLOYMENT

E Country/ years lost	2012	2015
Austria	5	10
Belgium	5	10
Bulgaria	8	6
Croatia	11	14
Cyprus	7	10
Czech Rep.	6	0
Denmark	18	19
Estonia	8	7
Finland	6	15
France	13	18
Germany	0	0
Greece	13	16
Hungary	16	11
Ireland	18	18
Italy	13	17
Latvia	11	7
Lithuania	10	7
Luxembourg	8	11
Malta	0	0
Netherlands	7	19
Poland	6	7
Portugal	27	30
Romania	6	9
Slovakia	7	7
Slovenia	14	17
Spain	18	21
Sweden	14	10
U.K.	16	8

REAL GDP

F Country/ years lost	2012	2015
Austria	0	7
Belgium	2	0
Bulgaria	0	0
Croatia	7	10
Cyprus	10	15
Czech Rep.	5	0
Denmark	7	9
Estonia	6	8
Finland	6	10
France	6	8
Germany	0	0
Greece	13	17
Hungary	7	0
Ireland	10	0
Italy	13	18
Latvia	6	0
Lithuania	0	0
Luxembourg	7	9
Malta	0	0
Netherlands	6	8
Poland	0	0
Portugal	13	13
Romania	7	0
Slovakia	0	0
Slovenia	6	9
Spain	11	12
Sweden	7	0
U.K.	7	0

Figure 2.4: Proust I Index findings in years lost for 2012 and 2015 for the Household Expenditure, Unemployment Rate and Real GDP parameters individually. *Source: Eurostat*.

2.4.1 Real House Cost

For every E.U. country, the time series (see Appendix, Tables A through F) for the real value of the house rises into the 2000's peaking around 2007-2008, after which they entered into the economic crisis. Recovery ranges from two years (Sweden, Germany and Bulgaria) to nonexistent (Greece, Italy and the Netherlands). Table A in Figure 2.3 presents their years lost for this parameter both in 2012 and in 2015, and performance is classified in Figure 2.5. Just

about every country, except for Luxembourg, Sweden, Austria, Belgium and Germany, have lost progress. For 2015, the value of the average E.U. homeowner's dwelling was that of 9.6 years ago, with fifteen out of twenty-eight losing even more than that. In particular, Greece, Ireland, Netherlands and Romania lost over fifteen years. Rather shockingly, Finnish homeowners went from having lost no progress in 2012 to facing house values of 2006 three years later. A closer look at the time series shows that their values had been decreasing steadily since 2010— not a good sign. Aside from those that lost no years, only eight countries had overcome their 2012 value, half of which remained below 2010's level. Southern countries are the ones most hurt by it, although significant losses are present in the East as well. Croatia, Italy, Slovenia and to a lesser extent Cyprus were at the E.U.'s average in 2012 but found themselves well below in 2015. Portugal was especially hurt: its 2015 value was completely unprecedented in its entire series, which from 1995 onwards hovered over 100, well above the E.U.'s average. After 2010, it fell significantly, yet in 2015 slightly improved from its 2012 level. Nevertheless, these countries' house prices fell strikingly compared to the rest of the E.U.

IMPROVED	BORDERLINE	WORSENED
Belgium	Poland	Greece
Germany	Romania	Spain
Luxembourg	Bulgaria	Croatia
Austria	Hungary	Italy
Sweden	Slovakia	Cyprus
Czech Rep.		Netherlands
Denmark		Ireland
Estonia		France
Latvia		Portugal
Lithuania		Slovenia
Malta		Finland
U.K.		

Figure 2.5: Real house cost performance ranking.

Furthermore, the rate of homeownership measured in the previously mentioned house cost ECB study[72] shows that the countries with decreases in housing value are also some of the countries with the highest rate of homeownership. This is the case with Spain (83% of households own a house), Slovenia (82%), Cyprus (77%), Portugal (71%), Italy (69%) and Finland (68%). These are also some of the countries whose household wealth is determined the most by the value of the house: Spain (53%), Slovenia (68%), Italy (61%), and Finland (61%), the average of the eurozone being 51%. Only Cyprus and Portugal had a somewhat lower percentage, at 30% an 44%, respectively. This parameter suggests that, *ceteris paribus*, homeowners spread across the whole E.U.'s wealth suffered a significant blow.

The classification of the countries into groups by performance, taking into consideration years lost, position relative to the E.U. average and percentage change over 2012-2015, yielded the results shown above.

As one can see, an almost equal number of countries performed well (twelve) as those who didn't (eleven), with only five countries borderline. A clear split is evident.

[72] (Mathä, Thomas; Porpiglia, Alessandro; Ziegelmeyer, Michael 2014)

2.4.2 Total Financial Assets Held by Households

For this parameter, the findings were much less negative (Figure 2.6). A similar dip occurred in 2007-2008, but in this case most E.U. countries recovered. Cyprus was the only country in which households in 2015 held less financial assets than in 2012, although Italy and Greece's recovery past their 2012 value is moderate because of the value being the same as a decade before. Otherwise, every other country's values increased. This is most likely due to the fact that these particular data are in nominal terms: growth rates from 2012-2015 become especially useful in capturing countries' divergences rather than years lost. These show that Baltic households experienced a tremendous increase in financial asset wealth of around 25%, along with several Eastern countries. In the West, France, Ireland, Spain and Germany's rates were still very strong (around 15%), yet lower than in the East. The Southern area continues to suffer as Croatia, Portugal and Slovenia experienced a slowdown in growth — the average of the three being around 8%. While still good, relatively they are lagging.

A

IMPROVED	BORDERLINE	WORSENED
Belgium	Croatia	Cyprus
Bulgaria	Portugal	Greece
Denmark	Slovenia	Italy
Germany	Estonia	
Luxembourg	Romania	
Finland	Malta	
Sweden		
Czech Rep.		
Ireland		
Spain		
France		
Latvia		
Lithuania		
Hungary		
Austria		
Poland		
Slovakia		
U.K.		
Netherlands		

B

Country	'12-'15 growth	Country	'12-'15 growth
EU28	17.02%	Latvia	33.14%
€-zone	13.06%	Lithuania	21.98%
Belgium	15.36%	Luxembourg	28.86%
Bulgaria	37.43%	Hungary	17.11%
Czech Rep.	10.13%	Malta	27.87%
Denmark	19.42%	Netherlands	15.42%
Germany	14.23%	Austria	11.11%
Estonia	24.84%	Poland	17.18%
Ireland	14.46%	Portugal	5.31%
Greece	10.63%	Romania	36.35%
Spain	16.37%	Slovenia	8.01%
France	12.43%	Slovakia	24.74%
Croatia	14.12%	Finland	20.13%
Italy	9.10%	Sweden	26.65%
Cyprus	-9.39%	U.K.	27.06%

Figure 2.6: A. Performance ranking for the 'Total financial assets held by households' parameter, and **B.** Table of the rate of growth from 2012-2015 for all E.U. countries individually, along with the E.U. and eurozone aggregates for comparison.

The three countries performing poorly in this parameter, along with the three borderline countries Croatia, Portugal and Slovenia, also appear in the 'worsened' group of house value. This would suggest that their household wealth has decreased, both in national terms and relative to other E.U. countries. Similarly, the remaining countries that saw a decrease in house cost and an increase in financial assets see a greater portion of their households' wealth tied to a more volatile sector. These are Cyprus, Greece, Italy, Spain, Croatia and the Netherlands mainly. The problems associated with these two dynamics, namely a decrease in consumption due to lower disposable income and a higher risk of losing more wealth in case of an economic downturn, are not uniform across the E.U. and thus opposite strategies are required.

2.4.3 Real Wages

In terms of real wages, performance is much less uniform. As of 2015, the E.U. as a whole has seen an increase in wages by seven percent since 2012. Comparing to this average, three blocs appear (Figure 2.7). The worst, again dominated by Southern European countries and Ireland, is largely characterized by a loss in wage progress. Greece heads this list with eleven years lost in 2015, followed by Cyprus and Portugal (both at seven). While the remaining countries – Ireland, Italy, Spain and Slovenia – experienced an improvement in wages both in 2012 and in 2015, they are well below the E.U.'s average and the trends do not suggest that they are gaining back ground compared to their partners. The 'improved' group sees twelve countries at or above the E.U.'s average increase, with Eastern countries in particular seeing a significant increase in real wages of on average 20% since 2012. Finally, eight countries are borderline. They do not have any years lost yet their 2015 value hovers around the E.U. average.

IMPROVED	BORDERLINE	WORSENED
Bulgaria	Belgium	Greece
Estonia	Denmark	Cyprus
Latvia	Germany	Portugal
Lithuania	Netherlands	Ireland
Romania	Finland	Spain
Czech Rep.	France	Croatia
Luxembourg	Sweden	Italy
Hungary	U.K.	Slovenia
Malta		
Austria		
Poland		
Slovakia		

Figure 2.7: Real Wage performance ranking.

Recalling the aforementioned discussion on internal devaluation, and that wages are the largest component of a firm's production costs, it would seem that wages decreased only in Greece, Cyprus and to a minimal extent Portugal. Of the countries where wages increased slightly above the E.U.'s average, some surprises emerge: Belgium, Denmark, the Netherlands and most notably Germany. While not directly implying causation, this finding certainly casts doubts about the cooperation between these countries in terms of internal devaluation and allowing member-states to recover competitiveness and thus giving up export market shares. Certainly there are political

and practical domestic obstacles as labor markets are not nearly as flexible as the neoliberal theory would require. Nevertheless, studies find that the rigidity is singularly strong when it comes to decreasing wages[73] (known as *Downward Nominal and Real Wage Rigidity*, as could be the case for Italy, Portugal, Spain and other low-performing countries that have not decreased their real wages[74]) and not for increasing them. Ultimately however, more research is required to answer this question.

2.4.4 Household Expenditure

The final parameter, household consumption expenditure, sees another significant division in performance (Figure 2.8). Ten countries lost years, seven of which worsened their situation. In particular, Greece's households consumed on the level of 2004, a 26% reduction from their peak in 2008. To a lesser extent the same can be said of Croatia (8% reduction) and Hungary (7% reduction). Of the remaining three, two (Portugal and Finland) improved slightly, but their growth rate was lower than the E.U. average. As in the total financial assets parameter, Eastern countries Estonia, Latvia, Lithuania Romania experienced huge increases of 15% on average. The largest increase however came from the United Kingdom, which saw a 2012-2015 increase of almost 24%. Given household expenditure's significance in domestic demand, over one third of E.U. countries' contribution to it decreased. This lessens businesses' revenue, which in turn lowers the amount they can spend on production and in turn leads to worker count being reduced. The values could be understated because of their being in normal terms.

IMPROVED	BORDERLINE	WORSENED
Belgium	Portugal	Greece
Bulgaria	Finland	Cyprus
Denmark	Ireland	Croatia
Germany		Spain
Estonia		Italy
Latvia		Hungary
Lithuania		Slovenia
Malta		Czech Rep.
Austria		
U.K.		
Romania		
France		
Luxembourg		
Netherlands		
Poland		
Slovakia		
Sweden		

Figure 2.8: Household expenditure performance ranking.

Six out of the eight countries that had decreases in house cost, financial assets and real wages also worsened in terms of household expenditure. While calculating the magnitude of how much

[73] (Babecký, Jan; Du Caju, Philip; Kosma, Theodora; Lawless, Martina; Messina, Julián; Rõõm, Tairi 2010, Messina, Julián; Duarte, Cláudia Filipa; Izquierdo, Mario; Du Caju, Philip; Hansen, Niels Lynggård 2010, Stuchlik, A. 2015)

[74] (Babecký, Jan; Du Caju, Philip; Kosma, Theodora; Lawless, Martina; Messina, Julián; Rõõm, Tairi 2010)

the decrease in household wealth and wages affects household expenditure requires more research (forming a more accurate causation), and consequently on domestic demand, it is nevertheless clear that many of the same countries appear consistently worsening in similar problems in the same sectors. This is important in a discussion on the role the Proust I Index can play in the aggregation of groups based on performance.

2.4.5 Unemployment Rate

IMPROVED	BORDERLINE	WORSENED
Czech Rep.	Lithuania	Greece
Germany	Romania	Spain
Estonia	Sweden	Cyprus
Malta	Latvia	Croatia
Bulgaria	Luxembourg	Italy
Denmark	Hungary	Portugal
Austria	Netherlands	Ireland
Poland	Lithuania	France
Slovakia		Slovenia
U.K.		Finland
		Belgium

Figure 2.9: Unemployment performance ranking.

The divergences within the E.U. for this parameter are quite pronounced (Figure 2.9). In the year of the original Proust Index, the unemployment rate ranged from a minimum of 4.9% in Austria to a maximum of 24.5% in Greece. In 2015, this gap does not diminish, increasing slightly from 24.9% in Greece to 4.6% in Germany. The average, 9.4%, is very high and denotes the already well-known employment problem on the European continent. At the same time this is an improvement from 2012's E.U. average which was 10.5%. This would suggest that unemployment has improved for several member-states, but given that the range increases, for some it has worsened. For the sake of comparison, if 2015's average were slightly lowered to 9%, which is still worryingly high, fourteen countries are higher, or half the E.U. About one third of its member-states saw an improvement from 2012, while another third worsened. In 2015, the average unemployment rate for the countries in the 'worsened' category was 13.6%, while for the 'improved' it was less than half, at 6.67%. The difference is quite staggering.

2.4.6 Real GDP

In this parameter, thirteen countries were below the E.U. average growth rate from 2012-2015 (indexed for comparability, see Appendix Table F). Of these, fourteen lost years (Figure 2.10). While most improved in 2015, Greece, Italy, Cyprus and Finland in particular worsened from 2012. Austria also lost an important seven years, however its data is very tight and so a small change overestimates the negative consequences. To properly analyze the divergences, a specific focus on growth rates was needed. In fact, Austria's growth rate from 2012 is slightly under zero, which is genuinely worrying. France similarly largely stagnated from 2012 with its years lost overestimating its negative performance. Nevertheless, in comparison to the E.U.'s

average growth rate it is much lower. On the other hand, several countries experienced massive growth in real GDP from 2012-2015. Ireland grew by 37%, but also Malta (18%), Lithuania (12%) and Romania (12%) performed exceptionally well. Other countries like Germany and Belgium had lower growth rates than the E.U. average, however their real GDP measure experienced virtually no setbacks (the latter lost two years in 2012 but had already recovered into 2014, and the former grew steadily) through the crisis, signifying that their production weathered the downturn almost entirely. Along broad lines, Eastern countries in general increased their annual output greatly, while Southern Europe and Finland again are left behind.

IMPROVED	BORDERLINE	WORSENED
Bulgaria	Denmark	Greece
Germany	France	Italy
Lithuania	Netherlands	Cyprus
Malta	Austria	Finland
Poland	Slovenia	Spain
Slovakia	Luxembourg	Croatia
Romania		Portugal
Belgium		
Czech Rep.		
Estonia		
Ireland		
Latvia		
Hungary		
Sweden		
U.K.		

Figure 2.10: Real GDP performance ranking.

2.4.7 Robustness for Methodology

In order to further strengthen the above findings, a type of robustness test for the Proust I Index's methodology was devised. Its purpose was to see if a purely mechanical approach could reproduce its findings. To do so, the equation tracks how many years separate the 'year zero' from the first local maximum. If the value was lower than this peak, than a one for that year was added. At the end, the total amount of years in which a one shows up is the calculation of years lost and subsequent grouping, in a purely quantitative way so as to see just how strong my methodology is. This methodology works well for three types of trends: when a parameter that increases steadily reaches a peak, decreases for a little but then recovers past their peak; when a parameter continues to increase; and when there is no recovery following the peak. However, this test encounters problems in situations of two local maximums close to each other. More specifically, consider a country that peaks before the crisis, dips for two years, recovers again and then dips again into 2015— the test would calculate years lost from the nearest peak to 'year zero'. In this case, it would occur during the crisis and not the peak before, thus skipping the years lost following the first peak (due to the crisis) and underestimating the number of years lost. This goes to show that a qualitative element, which may elect to skip the nearest local maximum in such a case, is indeed crucial for getting an accurate measure. Since this double-dip dynamic is common in the datasets used, the qualitative element was incorporated into the Proust I Index, so the robustness test confirms the methodology employed (see appendix for robustness test findings).

2.4.8 Concluding Remarks

By isolating the individual parameters, the divergences within the E.U. are obviously more marked and specific. Over all six parameters, an average of almost 30% of countries performed significantly worse than their fellow member-states in years lost, in comparison to the E.U.'s average and in terms of growth rates from 2012 to 2015. This equates to a bit more than eight countries. If the borderline countries tending on bad performance are extended to the proportion, the average rises to 40% of E.U. countries— about eleven out of the twenty-eight. The divergent performance is most clearly balanced in two parameters, unemployment and house cost, and least captured in the two nominal variables, household expenditure and total financial assets held by households. Most countries' categorizations are consistent across all the parameters. These include Germany, Austria, Belgium, and the Baltic states doing well, and the PIIGS countries, Croatia and Cyprus, and to a lesser extent Finland and Slovenia doing poorly. The basis for two sizable groups thus emerges.

2.5 GROUPS BASED ON INDIVIDUAL PARAMETERS

Given the evident divergences found above and a strong proportion on both sides, the idea of two distinct groups emerges. However in addition to the first grouping above based on the overall Proust I Index measure (page 22), at least two other groupings can be derived from each individual parameter's classifications. The second grouping involves aggregating the countries' ranking in each parameter. Countries with a higher percentage of 'red' classifications go into one group, while those with more 'green' classifications go into the other. 'Borderline' parameters are assigned to 'green' if they are 'light blue', else to 'red' if they are 'dark blue'. Ultimately, this definition lumps together countries that have on average more lost years than others, negative trends and/or levels below the E.U.'s average across all six parameters of the economy. It is the full extension of what the Proust I Index can offer in this regard.

The third grouping is much narrower, focusing on a sector rather than the overall economy. The reasoning for doing this is to see whether forming a group to target a specific sector or policy area would yield consistent results across other economic variables, or if this would instead generate inefficient results outside of its scope. For example, consider a two-speed Europe set-up that allows one group to target the household wealth sector with the goal to stimulate consumption and raise living standards through it. Groups would be determined based on performance in the two main areas of household wealth in the index: house cost and total financial assets held by households. The same methodology would apply for extrapolating countries' performance, so essentially this is a localized version of the second grouping above. However, instead of seeing how divergent countries are over the entire range of the parameters,

the hypothesis now becomes: does this objective yield efficient allocations in other sectors (i.e., divergent trends still show up in the other parameters for the same groups)? If so, then one can conclude that such an allotment focused primarily on resolving issues in a particular sector still allow different policies to be effective in other areas. A political element could be introduced for member-states to decide on areas to target and form groups consequentially. This could be an especially persuasive route for implementing a two-speed Europe for economic recovery. If certain sectors like unemployment were decided politically to be the initial focus, the group would remain relevant for further actions. However, were the divergence to exist only in the specific area, then this definition would not lead to an efficient grouping for the long term, and would be obsolete once those parameters improved. For this thesis, a grouping on household wealth was used.

We now have three groups: the Overall Proust I grouping, the Individual Parameter grouping, and the Household Wealth grouping. To ascertain which of these is most indicative of the divergent economic trends, and thus provides groups where tailored policy could have the most effect, the time series performance of each group was averaged in all parameters. Data were indexed to 2010 to capture the trends and eliminate the weights of big countries. For example, if real GDP were measured simply in euro, comparatively small countries like Latvia or Romania would not affect the graphs, only Germany, France, the United Kingdom or Italy would. Instead I am measuring solely trends. The gap is then contrasted between the three groupings. The greater the gap, the more different the two groups are within the same grouping and thus the more similar the performance inside a group is.

Figure 2.11 summarizes the three groupings, Overall Proust I Grouping, Individual Parameter Grouping, and Household Wealth Grouping, and the graphs in Figure 2.12 depict each group's trends across all parameters. The three different two-speed Europe definitions yield similar, yet distinct enough results to allow for a singular definition to be gauged as most effective. In all of the graphs above, the red and green lines diverge more than they ever have following 2007-08. In most cases, the divergence is getting larger into 2016. The time series data that were averaged were indexed to 2010 so as to eliminate the distortion from big countries. This is because if the values were kept in quantities (such as millions of euro), most of the E.U. countries's data would be dwarfed by that of France, Germany, Italy and the United Kingdom. Instead, by indexing them the focus becomes on the trends of these countries, which is what countries are divided by in the first place. By eye, greater divergences can be discerned in certain parameters. This is particularly the case for unemployment, where the Individual Parameter grouping averages' divergence starts sooner, and the gap is greater, than the other groupings. In a similar fashion, the Overall Proust I Index grouping averages for household expenditure are rather close after 2010, while the other two groupings' diverge at similar times. The Individual Parameter grouping exhibits less divergence in the house cost averages compared to the other two groupings. A more mathematically precise way to discern the grouping with the most defined divergences was devised.

OVERALL PROUST I	
Red group	Green group
Croatia	Austria
Cyprus	Belgium
Denmark	Bulgaria
Finland	Czech Rep.
France	Estonia
Greece	Germany
Ireland	Hungary
Italy	Latvia
Netherlands	Lithuania
Portugal	Luxembourg
Slovenia	Malta
Spain	Poland
	Romania
	Slovakia
	Sweden
	U.K.

INDIVIDUAL PARMETER	
Red group	Green group
Croatia	Austria
Cyprus	Belgium
Finland	Bulgaria
France	Czech Rep.
Greece	Denmark
Ireland	Estonia
Italy	Germany
Portugal	Hungary
Slovenia	Latvia
Spain	Lithuania
	Luxembourg
	Malta
	Netherlands
	Poland
	Romania
	Slovakia
	Sweden
	U.K.

HOUSEHOLD WEALTH	
Red group	Green group
Croatia	Austria
Cyprus	Belgium
Denmark	Bulgaria
Finland	Czech Rep.
France	Estonia
Greece	Germany
Ireland	Hungary
Italy	Latvia
Netherlands	Lithuania
Poland	Luxembourg
Portugal	Malta
Romania	Slovakia
Slovenia	Sweden
Spain	U.K.

Figure 2.11: Country groups within each different grouping: the Overall Proust I Grouping is in grey, Individual Parameter Grouping is in blue and Household Wealth Grouping is in orange.

The gap between two groups of the same grouping can be measured on a yearly basis. If each parameter's annual gaps are summed (in absolute value terms), then the groupings' own total divergence can be compared this way. A further step involves dividing each grouping's gap by that year's total group value. This normalizes the gap so as to show it as a proportion of the magnitude of the values compared. For example, a gap between 100 and 105 is proportionally much less than a gap between say five and ten. The division by the total encompasses this weight. In order to capture only the effect of the crisis, the analysis of the divergence will begin starting at the year 2000 as any divergence prior will have other determinants.

Figure 2.13 reveals the gap between each group's average in each parameter and for every year, has rather significant findings. Up to 2010, the divergence between the gaps decreases. This means that the groups' performances within all groupings were slowly converging. However, since then the divergence has been growing, with the Individual Parameter grouping's gap remarkably greater than those of the other two, which are almost identical. It is important to note that since the gap compares averaged indexes, it is normal that the 2010 value will be almost the same for all as it was the base year for four out of the six parameters. Nevertheless, the Individual Parameter grouping exhibits significantly more of a differentiation between its groups following 2010. Interestingly, this was not the case prior to 2010, when it was the Overall Proust I grouping that exhibited the most difference. But, for a two-speed framework following the wake of the 2007-2008 economic crisis, the Individual Parameter grouping offers the best distinction of countries going forward. It would thus be better for advising a two-speed

Figure 2.12: Average of countries in specific group's time series (indexed), per grouping. *Source: Eurostat.*

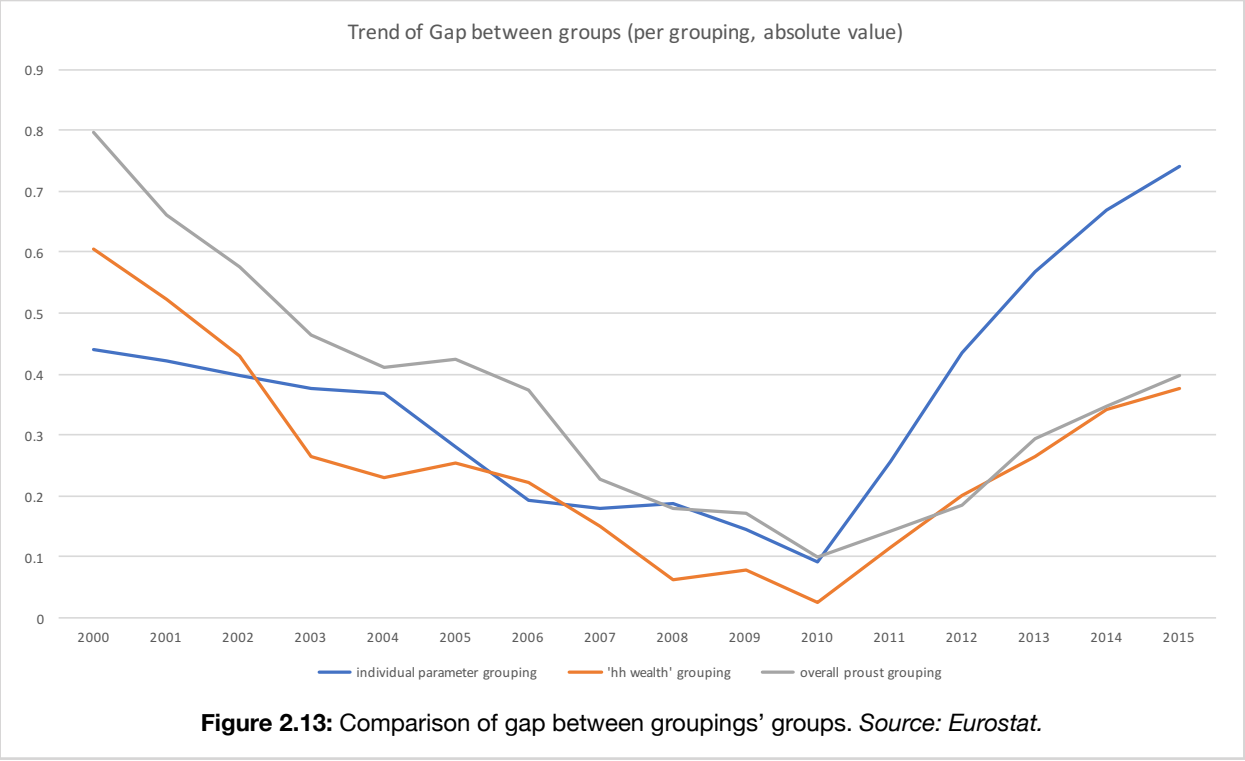


Figure 2.13: Comparison of gap between groupings' groups. *Source: Eurostat.*

demarcation within the E.U. compared to the other groupings. The Individual Parameter grouping provides the best demarcation across all parameters, providing opportunities in each of them for specific policies to have a strong effect without having to change its composition.

In this case, the specific sector grouping through Household Wealth targeting does not perform well compared to the other groupings, neither in gap trend between its two groups nor in the total amount of this gap (the summation of every year's normalized gap starting in 2000 is 4.1 which is much less than the over 5.75 for both other groupings). This would suggest that its groups are more heterogeneous in other parameters and thus any policy in different sectors would be less efficient.

2.5.1 Concluding Remarks

All in all, the new Proust I Index that I developed showcases significant divergent macroeconomic trends within the E.U. and allows groupings to be determined based upon these trends. Ultimately, one particular grouping is chosen above the others which exhibits the most defined divergence between its two groups, meaning that the countries within each are most related in terms of trends. In the context of a potential two-speed Europe, the Proust I Index's methodology provides a strong, concrete way of divvying up the two groups that is rooted in objective analysis of data, something which is currently missing both in the apposite literature and in any publicly available research. The findings go against the current political rhetoric that it

is solely the PIIGS and Mediterranean countries that are lagging behind the rest of the E.U.: Finland, Slovenia and France surprise in this regard for being in the same group, both in how their neighboring countries are performing (Slovakia and Sweden doing very well) and for being always considered a strong country (France). This opens new and interesting scenarios for economic and political discussions on the E.U. and its future.

3.0 CONCLUSIONS

3.1 FURTHER DISCUSSION

3.1.1 Flaws

The Proust Index along with its updated and slightly altered version, the Proust I Index, present a few flaws. One of the most obvious criticisms that can be made towards using its years-backward approach starting from a base year is how much changing the base year could affect the years lost calculation. This is particularly the case for volatile datasets that exhibit jumps from one year to the next. In such a case, years lost may underestimate or overestimate the actual trends. An example of this is the household expenditure variable used in the Proust I Index. Measured in nominal terms, the UK it exhibits the strongest growth of the whole E.U. However, its 2016 value (not included in the index but available from Eurostat) jumps down significantly. Were the test done for 2016, the number of years lost for the UK would be greater and, while this would not change the UK's classification in either group, the year for which the calculation is computed nonetheless presents a problem of continuity. For this parameter, the same dip does not occur for other countries that continue their trends into 2016, but this issue remains a potential weakness. Part of this issue lies in the difficulty of selecting of an appropriate deflator to remove the impact of price changes from the parameters. As mentioned in Chapter Two, no deflators were used for the household expenditure or total household financial assets parameters in this analysis because none were found. Nonetheless, the choice of deflator may be considered a potential flaw for any out-sized affect it has on the outcomes.

However, two aspects were consequentially incorporated in my version of the Proust I Index to help mitigate these issues. The first is to treat as much of the data in the Proust Index (which had apposite deflators) as possible in real terms, and to compensate for calendar and seasonal effects. This reduces any volatility caused by prices or by behavior in different times of the year. Real values over time usually crawl rather than jump, meaning that the possible variation from one year to the next is small compared to nominal values that can spike or decrease due to price changes as well as to goods and services changes. While not completely eliminating the risk that the conjuncture may change the Proust I Index's values on a yearly basis, my approach

aims to minimize it. Rolling averages over three-year or five-year spans may be worth exploring to further help smoothen volatility. However, if volatility is intrinsic to the variable, excessive effort at flattening it may prove misleading. Because the majority of variables are in real terms that are seasonally and calendar adjusted, the impact of a nominal variable's potential spikes on the total are reduced. Secondly, regarding the application of the Proust I Index in selecting groups, the procedure by which countries are divided includes two tests (E.U. average comparison and 2012-2015 growth trends) that are external to the Index's 'years lost' calculation and set entirely in the time series. As such, the bias that a misreading of years lost could have on groupings is effectively annulled.

Another potential flaw comes in the handling of the household wealth variable. If this variable's aggregates used in the original Proust Index really make up a significant majority, then its usage would prove redundant and muddy the results. On the other hand, if the supplementary components of household wealth do indeed weigh more than is assumed in this thesis, thus making the aggregate an important variable, then their omission would also affect the accuracy of the results. At this point, perhaps the aggregates ought to be eliminated.The original Proust Index article lacks clarity in this regard, and the question of whether to incorporate a household wealth variable or not is unresolved.

Thirdly, the practical flaws associated with a two-speed Europe briefly mentioned above, particularly if the groupings separate eurozone countries, may prove unsurmountable and block the project from taking off. Policies in one group, which may be inflationary, could go against policies to contain inflation in the other group. Asymmetric shocks, as occurs today, would similarly affect the balance of the common currency. Maintaining the euro as is through these scenarios, while also trying to follow two different strategies, would simply be impossible. A theoretical solution to this problem would be the introduction of two currencies, one per bloc. While Joseph Stiglitz would applaud this idea, it opens a whole new discussion that would form the scope of a separate thesis.[75] These complications may very well be why Jean-Claude Juncker did not include economic two-speed in his White Paper. On a more general level, the existence of Fitoussi and Saraceno's social pressure may inhibit countries from wanting to join a particular group, thus making them unwilling to go forward with a multi-speed framework. Ultimately, the bureaucratic, political and social problems would only foment uncertainty. Perhaps the institutional changes needed to create the preconditions for such a two-speed system to be implemented, such as allowing ECB to back domestic debt or introducing a form of governance in the eurozone, would resolve the economic woes on their own without the need for actually implementing the multi-speed solution. Several research in this regard already exists.[76]

[75] (Stiglitz, Joseph 2016, Stiglitz, Joseph 2016)

[76] (Hennette, Stéphanie; Piketty, Thomas; Sacriste, Guillaume; Vauchez, Antoine 2017)

3.1.2 Future Directions

The relative inadequacy of the Household Wealth grouping in showcasing definite groups in the rest of the variables raises questions on the effectiveness of the Individual Parameter grouping in other, new sectors. As such, two immediate possible future scenarios arise for the Proust I Index and its groupings. The first is to apply the Individual Parameter grouping in new areas with different variables and see how its two groups perform. If the current demarcation is still the most defined, then this further strengthens the selection of countries for each group. On the other hand, if the groups are less obvious, maybe the Proust I Index would need to be expanded to include more variables. For example, the activity rate which captures the amount of people leaving the labor force, or the poverty rate (as observed in several interesting tranches like the in-work poverty rate or the material depravation rate), may provide new ways of differentiating countries and further break down the unemployment parameter. This more in-depth view could reappraise the groups if, for example, a country with a low unemployment rate is also characterized by a rising number of people leaving the labor force. Such a scenario would indicate serious employment problems since people are increasingly discouraged from even look for a job. A further breakdown of the unemployment rate by age groups could point out new ares of divergence that, particularly in the future, could become problematic. Together, these may imply that some countries doing well according to the Proust I Index do indeed have employment problems that are not captured by the unemployment variable alone, and whom may benefit from being in a different group.

Similarly, another variable that can help delve deeper into the similarities between countries is the Gini Index which measures the distribution of income in a nation and its effect on output. A recent study by the chief economist of the Dutch bank ING, Mark Cliffe, shows that income inequality increases during times of crisis but, more importantly, doesn't always decrease during times of economic growth.[77] Furthermore, within advanced economies, the OECD finds that income inequality's rise between 1990 to 2010 has knocked 4.7 percentage points off of cumulative growth.[78] This occurs through missed investment in human capital, as those in low socio-economic conditions have serious difficulty accessing high-quality education.[79] Social mobility consequentially is decreased and talent goes untapped. More specifically, the study finds that a 1-point decrease in the Gini coefficient would result in a 0.8 percentage points rise of cumulative growth in the short term (a five year period), equating to a 0.15 percentage point increase each year.[80] In the long term, such as a twenty-five year period, the same 1-point Gini coefficient decrease would increase average cumulative growth by over 0.1 percentage points annually.[81] Like in the case of the activity rate, this new parameter ties in well with the current

[77] (Cliffe, Mark; Manceaux, Julien 2016)
[78] (OECD 2015)
[79] (OECD 2015)
[80] (OECD 2015)
[81] (OECD 2015)

real wage and annual output parameters of the Proust I Index and can highlight new groups where problems exist in the E.U.

Other variables also come to mind, such as export shares, productivity and even debt sustainability. If aggregated, such an index could be called the *Zweig Index* after Austrian author Stefan Zweig, a contemporary of Proust's who, discouraged by the fate of Europe during 1941 and by his treatment as a Jew, wrote a book entitled *The World of Yesterday* which fittingly (albeit fortuitously) matches the theme of 'lost time'. Furthermore, the fusion of the Zweig Index and the Proust I Index would begin to resemble the Macroeconomic Imbalance Procedure that the E.U. Commission uses to examine member-states' macroeconomic performance, albeit the methodology of years lost, comparison to the E.U. average and growth rates make it distinct.

3.2 CONCLUSION

The current political, economic and social situation may be leading towards dissolution of the E.U. At the very least, the prolonged economic stagnation and downturn for some countries, but not others, in addition to the increasing impact of the migration crisis, are putting into serious question the stability of European integration and the respective member-states' commitment to it. This situation has prompted E.U. leaders, most notably Jean Claude Juncker, to open up a discussion about a future path for the E.U. The most favored option today is that of a 'two-speed' Europe whereby countries that want to integrate more in certain areas (particularly defense and foreign policy) do so voluntarily, and those that do not are free to refuse. Brief research into the current E.U. institutional framework shows that this is already legally possible but that several forces (specifically Fitoussi and Saraceno's social norm pressure and national interests) impede a proper commitment to them. In the area of economic recovery for those countries that consistently continue to be in trouble, and for those that are beginning to be in trouble, a potential two-speed solution would require an objective definition to divide up the countries.

An update and adaptation of the Proust Index, an index devised by *The Economist* that quantifies the impact of the 2007-2008 crisis in terms of lost economic time, provides answers to the two broad questions that the current E.U. scenario poses on the future of Europe: macroeconomic trends do suggest that divergences within the E.U. clearly exist and are increasing; and an objective definition based on a quantitative analysis of macroeconomic trends does show the existence of two groups of countries within the E.U. that have similar macroeconomic performance. Most importantly, the groups' trends are consistent across the six parameters that span the range of the economy included in this Index, asserting the grouping's theoretical functionality and effectiveness. Despite some flaws, the overall simplicity leading to a seemingly rational multi-speed division of E.U. countries suggests that this work could form a

sound a basis for any methodology that would be required to implement an actual two-speed Europe based on economic performance. While such changes may face insurmountable obstacles in the form of bureaucracy, weak political will and the effects of social norms and national interests, at the very least this research outlines clear areas of divergence that unquestionably exist. Furthermore, since the findings indicate that the gap between the groups continues to widen, this research underlines the urgency for a solution to be found even by retaining the current single-tier framework. Such a situation would necessitate a change in the E.U. framework to allow policies that are more tailored to member-states needs.

Appendix

The tables below represent the time series data used to compile the Proust I Index and the subsequent groupings. Descriptions of the data are written in red and highlighted in yellow above each table. Baseline years are highlighted in orange, and the 2008 downturn is in grey.

A

House price, deflated annual data, Index 2010=100. Source: eurostat

GEO/TIME	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	12-'15 growth rate
Belgium	66.2	68	71.34	75.13	79.74	87.46	93.11	97.55	98.71	98.64	100	100.98	101.22	101.54	100.24	101.57	0%
Bulgaria	:	51.86	45.69	50.63	72.18	92.29	103.66	122.72	144.33	113.98	100	91.34	86.52	86.83	88.11	89.52	3%
Czech Republ	64.32	68.02	75.56	83.15	80.99	81.31	85.97	99.64	107.4	102.32	100	98.67	95.19	94.39	96.12	99.88	5%
Denmark	76.04	78.65	80	81.56	87.84	101.55	123.28	124.42	114.67	99.68	100	96.04	91.3	94.09	96.9	103	13%
Germany (unt	114.77	112.92	109.94	108.41	105.76	105.43	103.89	100.07	99.73	100.95	100	101.44	103.44	105.52	107.84	112.31	9%
Estonia	:	:	:	:	:	117.96	166.28	186.42	155.58	97.92	100	102.64	105.92	114.11	129.06	137.89	30%
Ireland	86.1	94.93	94.32	103.74	113.29	122.33	137.09	142.98	130.95	113.12	100	83.09	70.5	71.27	82.02	88.83	26%
Greece	76.69	85.38	95.14	97.77	96.81	104.3	114.39	116.91	113.94	108.72	100	92.44	81.31	73.9	70.15	67.66	-17%
Spain	59.27	62.87	70.59	80.18	90.59	99.5	108.91	115.74	110.17	103.79	100	90.17	75.05	67.49	67.61	70.18	-6%
France	56.76	60	64.68	71.16	80.21	90.85	99.7	103.27	101.41	96.48	100	103.91	101.9	99.25	97.57	96.3	-5%
Croatia	82.16	79.94	82.5	83.29	90.57	97.55	111.1	120.92	117.84	108.41	100	97.85	93.31	87.97	87.01	84.95	-9%
Italy	76.91	79.3	86.24	88.97	92.23	97.19	100.17	102.84	102.37	102.24	100	97.9	92.66	86.29	82.33	80.21	-13%
Cyprus	:	:	90.34	88.2	95.81	98.33	106.65	115.33	115.97	108.26	100	95.52	90.4	86.71	85.59	85.79	-5%
Latvia	63.62	62.35	86.65	101.02	97.01	109.61	154.54	188.59	168.18	109.52	100	104.03	103.65	110.47	115.14	112	8%
Lithuania	65.54	72.09	76.43	85.21	92.26	113.24	138.87	165.69	162.84	109.35	100	102.38	99.1	99.31	105.58	110.41	11%
Luxembourg	54.23	60.76	64.99	70.68	78.77	84.95	92.12	96.38	96.6	95.99	100	100.64	102.78	106.07	110.24	116.74	14%
Hungary	:	:	:	:	:	:	:	120.48	116.69	106.22	100	93.08	84.43	80.78	83.36	93.04	10%
Malta	44.7	47.69	52.72	60.7	68.76	71.92	84.12	100.51	107.7	101.07	100	96.58	97.01	95.61	97.95	102.44	6%
Netherlands	88.18	93.35	96.24	96.74	99.07	102.27	103.86	106.43	106.48	102.79	100	95.99	88.27	81.05	81.09	83.99	-5%
Austria	94.07	92.58	92.23	91.07	87.77	89.9	91.71	93.64	92.59	95.8	100	102.97	107.88	111.05	112.57	116.5	8%
Poland	:	:	:	:	:	:	:	:	112.48	106.49	100	95.37	89.09	84.85	85.8	88.28	-1%
Portugal	109.75	111.5	108.35	105.74	104.01	102.48	101	99.05	100.02	101.03	100	93.54	85.36	83.09	86.34	88.34	3%
Romania	:	:	:	:	:	:	:	:	159.12	115.96	100	84.19	76.5	74.34	71.93	73.32	-4%
Slovenia	:	:	:	68.96	73.45	82.24	93.83	111.43	112.89	101.31	100	100.94	92.7	87.14	81.42	82.62	-11%
Slovakia	:	:	:	:	:	:	85.05	106.92	120.65	105.21	100	94.83	89.21	88.83	90.16	95.11	7%
Finland	73.56	70.53	73.79	77.65	83.63	89.53	94.52	98.23	95.81	95.43	100.01	99.96	99.58	98.32	96.66	96.31	-3%
Sweden	56.46	59.65	62.56	65.59	71.19	77.22	85.8	95.16	93.28	93.97	100	100.82	101.49	106.29	115.04	128.84	27%
United Kingdo	60.11	64.72	74.72	85.43	94.06	102.97	108.09	116.4	106.99	96.59	100	95.16	93.74	93.98	99.83	105.46	13%

B

Total financial assets, Households and non-profit institutions serving households, million euro. Source: eurostat

GEO/TIME	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	12-'15 growth rate
European Un	:	:	:	:	22,022,225	24,363,795	26,228,273	26,428,042	23,681,461	25,138,683	26,504,146	27,264,910	28,693,313	29,654,791	32,202,696	33,578,277	17%
Belgium	731,113	740,444	699,135	734,938	797,267	867,899	907,971	938,384	875,968	946,291	988,616	1,042,450	1,096,236	1,152,490	1,213,816	1,264,666	15%
Bulgaria	7,041	8,796	9,534	10,959	13,073	15,822	21,854	34,233	31,197	33,709	35,731	41,212	44,210	53,537	56,534	60,756	37%
Czech Republ	55,779	65,886	71,166	74,599	81,011	91,442	103,856	124,310	132,881	138,978	156,347	155,358	172,826	165,086	173,183	190,338	10%
Denmark	339,234	330,265	332,770	361,887	404,533	509,782	568,572	574,989	512,816	571,432	625,248	633,849	692,954	709,490	776,034	827,513	19%
Germany (unt	3,512,487	3,611,777	3,558,667	3,781,780	3,946,626	4,172,000	4,181,607	4,405,441	4,205,598	4,369,399	4,546,558	4,589,593	4,817,713	5,015,280	5,250,287	5,503,256	14%
Estonia	3,723	3,981	5,086	6,291	8,104	10,331	13,666	15,952	16,792	17,093	14,860	15,830	18,099	20,298	22,769	22,595	25%
Ireland	:	181,853	186,719	213,559	239,880	274,733	306,842	304,173	281,408	299,806	307,342	305,529	317,407	323,294	346,567	363,316	14%
Greece	234,770	230,794	212,114	224,884	254,227	292,181	317,835	340,781	279,950	293,918	264,309	234,920	234,505	265,163	266,012	259,439	11%
Spain	1,025,076	1,076,506	1,091,926	1,248,585	1,388,299	1,580,762	1,839,970	1,886,628	1,684,691	1,733,974	1,740,191	1,782,758	1,771,943	1,934,676	1,986,307	2,061,998	16%
France	2,684,955	2,642,129	2,653,995	2,854,021	3,032,238	3,286,217	3,669,306	3,872,014	3,602,878	3,873,483	4,111,800	4,143,522	4,306,014	4,451,399	4,627,302	4,841,179	12%
Croatia	:	19,094	19,703	21,924	24,054	28,553	33,893	42,154	40,104	41,830	46,054	44,577	46,280	47,736	51,138	52,815	14%
Italy	3,040,917	3,021,686	3,127,532	3,227,003	3,462,606	3,865,135	4,176,422	3,959,076	3,770,534	3,742,103	3,669,930	3,592,090	3,775,205	3,951,393	4,029,871	4,118,770	9%
Cyprus	22,069	23,397	28,393	30,237	29,885	33,689	40,022	45,090	43,504	47,736	48,309	46,709	50,381	49,160	46,255	45,648	-9%
Latvia	:	:	:	:	6,659	8,172	12,010	16,907	16,139	14,624	16,940	17,830	19,431	19,050	24,013	25,870	33%
Lithuania	5,192	5,723	7,273	8,353	10,282	12,499	15,563	18,674	23,137	24,220	24,171	25,833	28,042	30,705	30,543	34,206	22%
Luxembourg	:	:	25,171	27,863	31,285	33,368	37,558	42,632	45,477	51,601	54,846	53,134	55,772	60,223	66,843	71,865	29%
Hungary	39,768	49,925	59,195	59,935	73,075	82,319	93,859	102,548	100,973	107,287	110,463	101,893	113,863	118,738	122,918	133,343	17%
Malta	:	:	:	:	11,204	12,855	13,913	14,228	14,542	15,275	16,331	17,014	18,613	19,525	22,286	23,800	28%
Netherlands	1,124,926	1,150,873	1,190,073	1,263,172	1,290,871	1,379,408	1,411,699	1,409,925	1,546,729	1,566,500	1,680,199	1,803,015	1,901,803	1,870,930	2,119,654	2,195,129	15%
Austria	326,958	335,308	343,722	364,040	388,998	426,233	459,091	484,072	473,355	509,053	532,264	536,441	557,923	581,207	606,089	619,890	11%
Poland	:	:	:	127,246	164,149	198,660	229,531	285,996	227,624	265,694	301,240	278,596	348,022	372,408	383,827	407,807	17%
Portugal	222,214	233,085	242,199	262,628	282,669	299,073	318,952	339,480	344,145	349,495	363,997	360,944	357,045	364,453	369,348	375,994	5%
Romania	13,411	14,974	16,172	18,503	28,362	44,183	79,707	101,033	84,043	65,105	68,189	72,552	83,417	103,088	110,086	113,742	36%
Slovenia	:	18,492	21,054	23,115	25,970	28,289	31,979	36,251	34,180	36,191	37,331	36,067	36,360	36,751	38,492	39,272	8%
Slovakia	14,155	15,125	15,283	15,658	16,905	18,940	24,851	29,876	37,555	38,955	42,619	45,902	49,660	52,635	57,204	61,945	25%
Finland	145,861	143,512	141,562	157,917	171,264	192,740	210,415	216,510	194,365	218,885	241,943	232,045	249,869	274,104	288,121	300,169	20%
Sweden	430,084	425,706	443,674	515,014	549,607	637,304	754,010	746,385	613,924	734,482	937,202	931,215	1,027,314	1,092,773	1,160,359	1,301,058	27%
United Kingdo	5,478,994	5,436,026	5,079,530	4,963,242	5,289,123	5,961,210	6,353,319	6,040,300	4,446,950	5,031,566	5,521,120	6,124,035	6,502,407	6,519,199	7,956,839	8,261,899	27%

C

Wages and Salaries (total), index 2012=100. Source: eurostat

GEO/TIME	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	12-'15 growth rate
Belgium	71.08	73.43	76.13	77.65	79.68	81.60	83.55	85.30	88.20	91.40	94.48	97.18	99.98	101.88	102.80	102.85	3%
Bulgaria	31.00	33.63	35.40	37.43	39.45	42.43	47.05	56.33	72.58	81.95	88.50	96.55	99.98	104.83	110.85	119.00	19%
Czech Republ	48.45	55.05	59.90	63.55	67.28	70.05	74.60	80.40	86.58	90.98	93.23	96.93	100.00	100.63	103.43	107.43	7%
Denmark	71.60	74.20	76.60	78.80	81.10	83.30	85.20	87.90	90.80	92.40	95.80	98.50	100.00	101.40	103.00	104.70	5%
Germany (unt	76.75	78.93	80.80	82.80	83.33	84.78	86.65	88.60	91.03	92.78	93.28	96.38	100.00	101.25	103.10	105.65	6%
Estonia	35.78	40.53	44.90	49.83	53.05	58.68	68.70	82.38	93.50	90.68	89.43	93.75	100.00	108.15	115.05	120.45	20%
Ireland	65.48	71.33	75.00	78.48	82.38	85.68	89.98	94.08	98.38	99.18	98.90	98.65	100.00	100.45	101.40	102.40	2%
Greece	79.48	80.78	89.55	94.43	99.48	96.20	98.13	101.60	103.95	110.75	110.85	105.95	100.00	87.95	86.83	84.48	-16%
Spain	65.80	68.60	71.75	75.15	78.20	80.80	83.53	87.00	91.15	95.45	96.33	98.83	99.98	99.98	100.38	101.18	1%
France	71.95	74.55	76.80	78.45	80.85	83.43	86.33	89.20	91.75	92.60	95.23	97.95	100.00	101.93	103.63	105.28	5%
Croatia	:	:	:	:	:	:	:	:	103.05	97.03	95.28	98.00	100.00	102.10	101.58	103.35	3%
Italy	70.13	72.70	75.10	77.05	78.95	81.88	84.23	85.70	89.15	93.08	95.45	97.95	100.00	101.85	102.50	102.68	3%
Cyprus	62.58	66.15	69.75	74.00	77.68	80.75	84.50	87.83	93.23	98.53	98.98	99.90	100.00	97.43	94.15	93.48	-7%
Latvia	28.98	31.40	34.00	37.75	41.73	48.18	59.73	77.85	95.08	94.68	92.40	95.68	100.00	105.25	113.00	121.33	21%
Lithuania	47.65	47.90	49.93	52.53	55.45	61.83	73.38	88.98	104.60	96.83	92.95	96.13	100.00	107.03	112.05	118.68	19%
Luxembourg	66.28	69.40	71.85	74.53	76.60	79.95	82.50	85.35	88.28	92.30	94.45	97.65	100.00	103.60	107.10	107.73	8%
Hungary	38.03	44.35	50.00	54.68	59.63	64.40	70.95	78.08	83.83	86.80	88.75	93.70	100.00	103.88	107.28	111.40	11%
Malta	62.73	65.53	67.90	71.90	76.33	78.13	80.80	83.13	84.03	84.88	90.15	95.63	100.00	104.85	107.23	111.53	12%
Netherlands	72.03	75.53	78.50	80.98	82.30	84.65	87.48	90.50	92.78	95.23	96.55	98.05	99.98	101.45	101.13	103.80	4%
Austria	70.80	73.30	75.48	76.80	77.18	80.20	82.25	84.48	88.15	92.13	93.30	95.90	100.00	102.43	105.50	109.00	9%
Poland	50.25	54.60	58.63	61.35	63.73	66.80	70.68	78.10	85.98	89.93	92.73	96.95	100.00	103.43	106.95	111.03	11%
Portugal	79.13	81.65	83.90	85.15	86.60	90.45	91.43	95.70	99.70	102.53	104.43	105.48	100.00	98.10	97.43	99.65	0%
Romania	13.28	19.85	25.38	31.35	37.13	42.40	49.88	61.53	74.73	82.93	87.90	94.18	99.98	103.58	110.63	119.10	19%
Slovenia	49.93	56.00	58.40	62.65	68.38	72.15	76.65	81.50	90.50	94.15	96.38	98.75	100.00	98.93	101.45	102.43	2%
Slovakia	45.68	48.60	56.90	62.10	67.05	72.63	78.40	83.80	90.05	93.03	93.70	97.63	100.00	101.33	106.83	111.08	11%
Finland	62.23	65.53	68.03	70.95	73.75	76.78	79.18	84.20	88.03	92.13	93.90	96.00	100.00	102.05	103.63	104.88	5%
Sweden	68.50	71.80	74.40	77.00	79.40	82.10	84.60	86.90	90.00	92.40	94.40	96.70	100.00	102.20	104.70	107.40	7%
United Kingdo	66.58	70.40	73.05	75.15	79.58	82.80	86.28	90.63	94.78	95.13	97.35	99.08	100.00	101.00	102.75	106.45	6%

Source: Eurostat

D

Final consumption expenditure of households, total, current prices, million euro. Source: eurostat

GEO/TIME	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	12-'15 growth rate
European Unio	5353610	5550092	5860673	5943841	6218941	6506063	6815316	7146790	7211474	6874321	7135873	7312718	7496201	7510957	7705723	8031110	7%
Belgium	133802	137926	140221	143113	148786	154617	161649	169473	177798	176979	184948	191259	196018	199444	202182	205115	5%
Bulgaria	9405	10714	11716	12540	14158	16253	18043	22127	24302	23377	24243	25578	27276	25902	26569	28035	3%
Czech Republ	33477	37325	43050	43660	46506	51893	57573	63071	75691	71590	75968	79370	78343	76852	74238	77344	-1%
Denmark	81045	83086	86190	88381	93649	98657	103665	107489	111069	108501	112025	114856	118174	119415	121116	124221	5%
Germany (unti	1177409	1217672	1222544	1245406	1267151	1293533	1327308	1348896	1380119	1375161	1406989	1454007	1494689	1514110	1540986	1581581	6%
Estonia	3311	3738	4234	4714	5293	6046	7232	8490	8727	7346	7480	8195	8885	9465	9818	10267	16%
Ireland	51132	55833	60879	65105	68678	74675	81673	89722	91165	80375	78785	78726	78962	79940	82566	87260	11%
Greece	92597	97608	105106	112780	120707	128557	136002	147079	159108	157389	152038	139855	128866	122909	120265	118101	-8%
Spain	380194	407979	431627	456041	491598	528157	568217	605824	623029	595010	607981	608153	600532	587697	597918	613760	2%
France	781705	816547	840250	868521	905538	945812	987164	1032728	1066597	1051463	1082394	1106882	1119646	1132231	1140872	1155987	3%
Croatia	14187	15876	17731	18448	19811	21586	23262	25365	27555	25898	26096	26255	26008	25810	25072	25318	-3%
Italy	744476	768473	790795	820426	848612	877797	913227	944918	964247	945051	970153	998377	985067	971969	976780	991501	1%
Cyprus	6572	7023	7335	7720	8449	9130	9850	11097	12529	11741	12375	12684	12807	12034	12064	12084	-6%
Latvia	5383	5759	6219	6395	7179	8260	10884	13364	13897	11159	11155	12225	13169	13805	14166	14584	11%
Lithuania	8132	8916	9742	10696	11836	13541	15458	18394	21183	18280	17882	19471	20691	21792	22762	23486	14%
Luxembourg	8541	8890	9419	9762	10020	10513	11124	11645	12043	12217	12725	13236	13820	14336	14816	14950	8%
Hungary	27054	31476	38020	41136	44552	48023	47294	53579	56076	48761	49956	51496	51644	51227	50970	52283	1%
Malta	2697	2843	2816	2858	2992	3155	3330	3392	3512	3651	3718	3916	4002	4133	4255	4527	13%
Netherlands	220228	232625	242554	246664	251977	257936	263736	274879	283262	274318	277194	283456	284265	288086	291027	296144	4%
Austria	111482	115631	117505	121396	126450	132433	138118	142953	147158	148510	152703	159775	164310	167669	170685	172979	5%
Poland	0	0	138460	123590	129558	152337	166947	187276	222527	191256	219087	230787	236056	237163	243659	248290	5%
Portugal	79220	82874	86855	89753	94199	99404	104491	110602	115216	110259	115063	112611	108221	107717	110546	114194	6%
Romania	27099	30617	32593	34040	41443	54482	66250	82847	88726	72193	78607	81971	82020	87200	91516	97427	19%
Slovenia	12174	12738	13544	14246	14774	15426	15976	17674	19142	19482	19980	20338	20129	19460	19827	19773	-2%
Slovakia	12223	13369	14768	16654	19375	21848	25188	30654	36722	37851	38396	39668	40868	41084	41605	42469	4%
Finland	62456	65873	68698	72241	74983	78125	82365	86806	91561	90383	94466	100464	103735	105890	108064	110181	6%
Sweden	127843	119913	126029	131478	136232	139053	145047	152924	152148	141320	166185	181641	190848	196969	193345	195273	2%
United Kingdo	1139768	1158769	1191774	1136077	1214436	1264817	1324245	1383524	1226366	1064800	1137281	1157466	1287152	1276648	1398034	1593976	24%

E

Total unemployment rate, percent of active population. Source: eurostat

GEO/TIME	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	12-'15 growth rate
European Unio	8.9	8.7	9.0	9.2	9.3	9.0	8.2	7.2	7.0	9.0	9.6	9.7	10.5	10.9	10.2	9.4	-10%
Belgium	6.9	6.6	7.5	8.2	8.4	8.5	8.3	7.5	7.0	7.9	8.3	7.2	7.6	8.4	8.5	8.5	12%
Bulgaria	16.4	19.5	18.2	13.7	12.1	10.1	9	6.9	5.6	6.8	10.3	11.3	12.3	13.0	11.4	9.2	-25%
Czech Republ	8.8	8.1	7.3	7.8	8.3	7.9	7.1	5.3	4.4	6.7	7.3	6.7	7.0	7	6.1	5.1	-27%
Denmark	4.3	4.5	4.6	5.4	5.5	4.8	3.9	3.8	3.4	6	7.5	7.6	7.5	7	6.6	6.2	-17%
Germany (unti	7.9	7.8	8.6	9.7	10.4	11.2	10.1	8.5	7.4	7.6	7	5.8	5.4	5.2	5	4.6	-15%
Estonia	14.6	13	11.2	10.3	10.1	8	5.9	4.6	5.5	13.5	16.7	12.3	10.0	8.6	7.4	6.2	-38%
Ireland	4.3	3.9	4.5	4.6	4.5	4.4	4.5	4.7	6.4	12	13.9	14.7	14.7	13.1	11.3	9.4	-36%
Greece	11.2	10.7	10.3	9.7	10.6	10	9	8.4	7.8	9.6	12.7	17.9	24.5	27.5	26.5	24.9	2%
Spain	11.9	10.6	11.5	11.5	11	9.2	8.5	8.2	11.3	17.9	19.9	21.4	24.8	26.1	24.5	22.1	-11%
France	8.6	7.8	7.9	8.5	8.9	8.9	8.8	8	7.4	9.1	9.3	9.2	9.8	10.3	10.3	10.4	6%
Croatia	15.8	15.9	15.1	14.2	13.9	13	11.6	9.9	8.6	9.2	11.7	13.7	16.0	17.3	17.3	16.3	2%
Italy	10	9	8.5	8.4	8	7.7	6.8	6.1	6.7	7.7	8.4	8.4	10.7	12.1	12.7	11.9	11%
Cyprus	4.8	3.9	3.5	4.1	4.6	5.3	4.6	3.9	3.7	5.4	6.3	7.9	11.9	15.9	16.1	15.0	26%
Latvia	14.3	13.5	12.5	11.6	11.7	10	7	6.1	7.7	17.5	19.5	16.2	15.0	11.9	10.8	9.9	-34%
Lithuania	16.4	17.4	13.8	12.4	10.9	8.3	5.8	4.3	5.8	13.8	17.8	15.4	13.4	11.8	10.7	9.1	-32%
Luxembourg	2.2	1.9	2.6	3.8	5	4.6	4.6	4.2	4.9	5.1	4.6	4.8	5.1	5.9	6	6.5	27%
Hungary	6.3	5.6	5.6	5.8	6.1	7.2	7.5	7.4	7.8	10	11.2	11	11.0	10.2	7.7	6.8	-38%
Malta	6.7	7.6	7.4	7.7	7.2	6.9	6.8	6.5	6	6.9	6.9	6.4	6.3	6.4	5.8	5.4	-14%
Netherlands	3.7	3.1	3.7	4.8	5.7	5.9	5	4.2	3.7	4.4	5	5	5.8	7.3	7.4	6.9	19%
Austria	3.9	4	4.4	4.8	5.5	5.6	5.3	4.9	4.1	5.3	4.8	4.6	4.9	5.4	5.6	5.7	16%
Poland	16.1	18.3	20	19.8	19.1	17.9	13.9	9.6	7.1	8.1	9.7	9.7	10.1	10.3	9	7.5	-26%
Portugal	5.1	5.1	6.2	7.4	7.8	8.8	8.9	9.1	8.8	10.7	12	12.9	15.8	16.4	14.1	12.6	-20%
Romania	7.6	7.4	8.3	7.7	8	7.1	7.2	6.4	5.6	6.5	7	7.2	6.8	7.1	6.8	6.8	0%
Slovenia	6.7	6.2	6.3	6.7	6.3	6.5	6	4.9	4.4	5.9	7.3	8.2	8.9	10.1	9.7	9.0	1%
Slovakia	18.9	19.5	18.8	17.7	18.4	16.4	13.5	11.2	9.6	12.1	14.5	13.7	14.0	14.2	13.2	11.5	-18%
Finland	9.8	9.1	9.1	9	8.8	8.4	7.7	6.9	6.4	8.2	8.4	7.8	7.7	8.2	8.7	9.4	22%
Sweden	5.6	5.8	6	6.6	7.4	7.7	7.1	6.1	6.2	8.3	8.6	7.8	8.0	8.0	7.9	7.4	-8%
United Kingdo	5.4	5.0	5.1	5.0	4.7	4.8	5.4	5.3	5.6	7.6	7.8	8.1	7.9	7.6	6.1	5.3	-33%

F

GDPr per person, chain linked volumes (2005 prices), milion euro. Source: eurostat

GEO/TIME	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	12-'15 growth rate
European Unio	21400	21824	22058	22241	22684	23020	23645	24221	24161	23005	23452	23824	23640	23627	23900	24333	3%
Belgium	30419	30593	30998	31099	32103	32621	33228	34119	34109	33062	33681	33785	33544	33321	33814	34149	2%
Bulgaria	2980	3108	3410	3615	3878	4185	4507	4874	5205	5053	5151	5287	5319	5396	5498	5731	8%
Czech Republic	11129	11520	11746	12179	12778	13597	14496	15252	15531	14662	14946	15210	15062	14974	15385	16044	7%
Denmark	42253	42448	42494	42540	43561	44465	46068	46320	45841	43310	43934	44314	44257	44493	45041	45502	3%
Germany (until	28707	29161	29097	28855	29195	29412	30522	31566	31946	30229	31541	33337	33459	33539	33971	34374	3%
Estonia	7609	8140	8692	9393	10050	11052	12261	13287	12609	10774	11038	11909	12463	12688	13089	13288	7%
Ireland	32998	34491	35790	36501	38330	39724	41090	41353	38501	36227	36735	36548	36052	36381	39336	49421	37%
Greece	17623	18249	18874	19917	20878	20947	22061	22718	22591	21554	20328	18465	17174	16742	16919	16989	-1%
Spain	21446	22197	22630	22909	23235	23683	24272	24751	24542	23373	23252	22931	22187	21851	22255	22999	4%
France	29263	29622	29736	29767	30386	30638	31139	31666	31549	30458	30908	31395	31309	31334	31370	31509	1%
Croatia	7846	8497	8922	9418	9802	10198	10682	11229	11464	10623	10459	10461	10266	10190	10176	10396	1%
Italy	27327	27793	27849	27821	28082	28163	28634	28977	28463	26744	27108	27184	26405	25822	25384	25578	-3%
Cyprus	20730	21259	21733	22016	22730	23249	23940	24634	24979	23902	23561	23056	21751	20365	20238	20844	-4%
Latvia	5154	5553	6031	6600	7222	8090	9141	10137	9847	8549	8389	9122	9625	9980	10306	10667	11%
Lithuania	5216	5597	6031	6712	7220	7879	8631	9705	10076	8661	8920	9737	10275	10749	11232	11519	12%
Luxembourg	70439	71070	72806	73124	75231	76596	79161	84528	82497	76526	79564	79616	77647	79072	80891	81773	5%
Hungary	7872	8186	8576	8933	9404	9835	10235	10292	10405	9736	9818	10018	9910	10144	10588	10945	10%
Malta	13869	13858	14155	14418	14389	14830	15014	15588	16023	15510	15940	16125	16440	17026	18266	19442	18%
Netherlands	34969	35438	35214	35124	35692	36355	37569	38900	39451	37777	38100	38546	37969	37786	38210	38791	2%
Austria	31705	32058	32417	32514	33220	33688	34594	35723	36166	34679	35278	36167	36293	36150	36148	36201	0%
Poland	0	0	6665	6906	7266	7527	7997	8580	8919	9149	9515	9982	10142	10284	10634	11056	9%
Portugal	16308	16494	16518	16286	16536	16628	16859	17245	17245	16717	17017	16707	16081	15982	16218	16560	3%
Romania	3702	3909	4222	4498	4895	5132	5578	5996	6667	6253	6245	6343	6415	6666	6897	7197	12%
Slovenia	14030	14427	14951	15368	16025	16657	17549	18701	19320	17619	17710	17797	17274	17059	17569	17961	4%
Slovakia	7760	8047	8411	8873	9345	9975	10817	11985	12653	11953	12537	12885	13070	13249	13576	14083	8%
Finland	30570	31300	31742	32304	33486	34306	35568	37261	37363	34107	34963	35702	35024	34595	34222	34185	-2%
Sweden	33817	34263	34870	35575	36968	37859	39475	40526	39994	37620	39513	40243	39843	40029	40693	41910	5%
United Kingdo	26643	27270	27810	28648	29228	29903	30430	30976	30532	28989	29324	29524	29689	30062	30771	31192	5%

Source: Eurostat

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