APPENDIX

APPENDIX A: DATA

Countries in the sample include Austria (AT), Belgium (BE), Canada (CA), Switzerland (CH), Germany (DE), Denmark (DK), Spain (ES), Finland (FI), France (FR), Italy (IT), Netherlands (NL), Sweden (SE), United Kingdom (UK), and the United States (US). An English translation of a source table or source title is provided only where a translation was provided in English in the original source; otherwise the table title or source title is reported in the original source language.

All links checked to be working as of 9/6/13.

I. Population and Labor Force Variables

Different sources report labor force variables in a variety of ways. A source might report the number unemployed, the number employed, the number in the labor force, or the number economically active; in other cases, labor force participation, unemployment rates, or activity rates are reported. From rates or levels, we determine the number of unemployed and employed. When variables from multiple sources overlapped, we take the average across sources.

All sources of labor market data come from household surveys, i.e. censuses or labor force surveys.

BE, DE, FR, IT, NL:

1970: "5. Population by age groups, total," pp. 148-155 and "9. Population by category of activity", pp. 186-193 (Eurostat 1973).

1973: "5. Population by age groups, total," pp. 148-155, and "19. Population par category of activity in 1973: hommes/femmes," pp. 250-257 (Eurostat 1975)

1975: "6. Population by age groups, total – 1975," pp. 192-199, and "10. Population by category of activity: total – 1975," pp. 232-239.

1977: "10. Population by category of activity: total - 1977", pp. 228-235 (Eurostat, 1979).

1979: "II.1. "Principal characteristics of population activity, total – 1979," pp. 60-65 (Eurostat 1981);

BE, DE, DK, ES, FR, IT, NL:

1981: "II.1. "Principal characteristics of population activity, total – 1981," pp. 51-53 (Eurostat 1984);

1983: "II.1 "Principal characteristics of population activity – 1983," p. 51-53 (Eurostat 1985);

1985: "II.1 "Principal characteristics of population activity," p. 51-53 (Eurostat 1986);

1985-6: "II.1. "Principal characteristics of population activity," pp. 46-49, and "II.4. Unemployment," pg. 66-73 (Eurostat 1987).

1986-7: "II.1. Principal characteristics of activity," pp. 59-53, and "II.4. Unemployment," pg. 70-77 (Eurostat 1988).

1987-8: "II.1. Principal characteristics of activity," pp. 50-53, and "II.4. Unemployment," pg. 70-77 (Eurostat 1989).

BE, DK, DE, ES, FR, IT, NL:

1988-1989: "Unemployment Rates in April (%)" (Eurostat 1989b)

BE, DK, DE, ES, FR, IT, NL:

1989-1990: "Unemployment Rates in April" (Eurostat 1990b)

1990-1: "Unemployment Rates in April" (Eurostat 1991)

BE, DE, DK, ES, FR, IT, NL:

1990-1: "II.1. Principal characteristics of activity," pp. 38-41, and "II.4. Unemployment," pg. 58-65 (Eurostat 1993).

1991-2: [No table title] (Eurostat 1993b)

BE, DE, DK, ES, FR, IT, NL:

1992-3: "II.1. Principal characteristics of activity," pp. 54-57, and "II.4. Unemployment" pg. 74-81 (Eurostat 1994a).

BE, DE, ES, FR, IT, NL, UK:

1992-3: [No table title] (Eurostat 1994b)

BE, DE, ES, FR, IT, NL:

1993-4: "II.1. Principal characteristics of activity," pp. 58-64, and "II.4. Unemployment," pg. 84-93 (Eurostat 1995a).

AT, BE, DE, ES, FI, FR, IT, NL, SE, UK:

1993-4: [No table title] (Eurostat 1995b)

BE, DE, DK, ES, FI, FR, IT, NL:

1994-5: "II.1. Principal characteristics of activity," pp. 58-63, and "II.4. Unemployment," pg. 84-93 (Eurostat 1996).

1995-6: "II.1. Principal characteristics of activity," pp. 58-63, and "II.4. Unemployment," pg. 84-93 (Eurostat 1997).

AT, BE, CH, DK, DE, ES, FI, FR, IT, NL, SE, UK:

1990 – 2011: "Population on 1 January by five years age groups and sex - NUTS 2 regions" (European Commission, n.d.); "Population on 1 January by broad age groups and sex - NUTS 3 regions" (European Commission, n.d.); "Annual average population (1 000) by sex - NUTS 3 regions" (European Commission, n.d.); "Economically active population by sex and age, at NUTS levels 1 and 2 (1000), reg_lfh2act" (European Commission, n.d.); "Economically active population by sex, age and NUTS 2 regions (1 000) (lfst_r_lfp2act)" (European Commission, n.d.); "Economically active population by sex and age, at NUTS levels 1, 2 and 3, Age from 15 to 24 (1000), lfst_r_lfp3pop" (European Commission, n.d.); "Employment by sex and age, at NUTS levels 1 and 2 (1000), reg_lfh2emp" (European Commission, n.d.); "Employment by sex, age and NUTS 2 regions (1 000) (lfst_r_lfe2emp) (European Commission, n.d.)

AT:

1971, 1981: Censuses (Statistics Austria, n.d.)

1974 – 2011: "Microcensus Time Series Since 1974" (Statistics Austria, n.d.)

CA:

1971 – 2012: "Table 051-0001 - Estimates of population, by age group and sex for July 1, Canada, provinces and territories, annual (persons unless otherwise noted)," (Statistics Canada, n.d.).

1976 – 2012: "Table 282-0087 Labor force survey estimates (LFS), by sex and age group, seasonally adjusted and unadjusted, annual (persons unless otherwise noted)", (Statistics Canada, n.d.).

CH:

1970, 1980, 1990, 2000: Census, Federal Statistical Office (FSO), accessed via IPUMS-International.

DK:

1970: Unpublished data kindly made available by Anita Lange at Statistics Denmark.

1971 – 1985: "BEF1: Population 1. January by municipality, sex, age and marital status (DISCONTINUED) (1971-2002)" (Statistics Denmark, n.d.)

1981 – 2006: "RAS1: Population by living-region, socioeconomic status (3 groups), ancestry, age and sex (DISCONTINUED) (1981-2006)," (Statistics Denmark, n.d.)

ES:

1970: "14. Población económicamente activa según el sexo, la rama de actividad económica y la situación profesional" (Instituto Nacional de Estadistica, 1974)

1970-1980: "1.4 Evolution of the population of Spain between the censuses 1970 and 1981 by reference date, autonomous community, sex, age group and year" (Spanish Statisticso Office, n.d.)

1976 – 2004: "Encuesta de Población Activa. Principales Resultados: 4.- Resultados provincials: Población de 16 y más años por sexo, provincia y relación con la actividad económica (6)." (INE Instituto Nacional de Estadística (España) [Spanish Statistical Office], n.d.)

1981-1990: "1.4 Evolution of the population of Spain between the censuses 1981 and 1991 by reference date, autonomous community, sex, age group and year."

1991-2000: "1.4 Evolution of the population of Spain between the censuses 1991 and 2001 by reference date, sex, autonomous community, five year age group and year."

2002-2012: "2.3 Population, by reference date, Autonomous Community, sex and five-year age group"

FI:

1970: "22. Economically active population by industry, by province on 31 Dec. 1970," pg. 47 (Finland Bureau of Statistics, 1972)

1977-1984: “Population of working age, labour fore and persons not in labour force by age and province” [various table numbers and pages], (Finland Bureau of Statistics, 1977-1984)

1985– 2009: “Labour force and persons not in labour force by age and province” [various table numbers and pages] (Finland Bureau of Statistics, annually 1985-2009)

FR:

1974 – 1985: “Taux de chomage regionaux et departementaux en moyennes annuelles de 1980 a 1985,” pg. 3 and “Taux de chomage regionaux en moyennes annuelles de 1974 a 1979,” pg. 4 (Marc and Marchand, 1986)

1982 – 2011, “Localised regional unemployment rates (Metropolitan France),” (Insee, n.d.)

IT:

1968 – 2010: “Table 2.3.2 - Resident population (a) at the 1st of January and average by region and geographical area - Years 1952-2010 [Average Population]” (Istat, n.d.)

1969-1995: **(**Obstfeld & Peri 1998)

SE:

1968-2011: “BE0101N1- Population by region, marital status, age, sex and period,” (Statistics Sweden, n.d.)

1971 – 1975: “Tabell 6. Relativa arbetskarftsta for olika kons-och civilstandskategorier samt regioner. Procenttal, standard-avvikelser for skattningarna inom parents”; “Tabell 7. Relativa arbetsloshetstal for olika kons- och civilstandskategorier samt regioner. Procenttal, standard-avvikesler for skattningarna inom parentes” (Statistiska meddelanden, 1971a-1975a).

1976 – 2011: “Population aged 16-64 years (AKU), 100-tal efter region, arbetskraftstillhörighet och tid.” Non-publicly-available data, kindly made available by the Swedish statistical office;

UK:

1971, Census of Population (Casweb, n.d.)

1981, 1991, Census of Population (nomis, n.d.)

US:

1968-1990: “State Population Estimates and Demographic Components of Change: 1900 to 1990 Total Population Estimates” (U.S. Census Bureau, n.d.)

1968-1975: March CPS, accessed via IPUMS-CPS

1976-2012: Series LASST01000003-LASST56000003 (BLS, n.d.)

1990-2000: “1990 to 1999 State Population Estimates: Annual Time Series” (U.S. Census Bureau, n.d.)

2000-2011: “Intercensal Estimates of the Resident Population by Sex and Age for States: April 1, 2000 to July 1, 2010” (U.S. Census Bureau, n.d.)

Table 1. Sources for time series of unemployment rates

Year	AT	BE	CA	CH	DE	DK	ES	FI	FR	IT	NL	SE	UK	US
1970		◆		■✠		❖	✦✠	✦	◆	◆○	◆	✦		✠
1971	■✠		✠							○		✦	■	✠
1972										○		✦		✠
1973		◆			◆				◆	◆○	◆	✦		✠
1974	■								✦	○		✦		✠
1975	■	◆			◆				✦◆✠	◆○	◆	✦		✠
1976	■		■				■		✦	○		❖		✠
1977	■	◆	■		◆		■	✦	✦◆	◆○	◆	❖		■
1978	■		■				■	✦	✦	○		❖		■
1979	■	◆	■		◆		■	✦	✦◆	◆○	◆	❖		■
1980	■		■	■✠			■	✦	✦	○		❖		■
1981	■✠	◆	■		◆	■	■✠		✦◆	◆○	◆	❖	■	■
1982	■		■			■	■	✦	✦■✠	○		❖		■
1983	■	◆	■		◆	■	■	✦	✦■◆	◆○	◆	❖		■
1984	■	◆	■		◆	■	■	✦	✦■◆	◆○	◆	❖		■
1985	■	◆	■		◆	■	■	✦	✦■◆	◆○	◆	❖		■
1986	■	◆	■		◆	■	■◆	✦	■◆	◆○	◆	❖		■
1987	■	◆	■		◆	■	■◆	✦	■◆	◆○	◆	❖		■
1988	■	◆	■		◆	◆■	■◆	✦	■◆	◆○	◆	❖		■
1989	■	◆	■		◆	◆■	■◆	✦	■◆	◆○	◆	❖	◆	■
1990	■	◆	■	■✠	◆	◆■	■◆	✦	■◆✠	◆○	◆	❖	◆	■
1991	■	◆	■		◆	◆■	■◆	✦	■◆	◆○	◆	❖	◆■	■
1992	■	◆	■		◆	◆■	■◆	✦	■◆	◆○	◆	❖	◆	■
1993	■	◆	■		◆	◆■	■◆	✦◆	■◆	◆○	◆	❖	◆	■
1994	■	◆	■		◆	◆■	■◆	✦◆	■◆	◆○	◆	◆❖	◆	■
1995	■◆	◆	■		◆	◆■	■◆	✦◆	■◆	◆○	◆	◆❖		■
1996	■◆★	◆ ★	■		◆★	■★	■◆★	✦◆	■◆■★	◆★○	◆★	◆★❖	★	■
1997	■★	★	■		★	■★	■★	✦	■★	★○	★	★❖	★	■
1998	■★	★	■		◆★	■★	■★	✦	■★	★○	★	★❖	★	■
1999	■★	★	■		◆★	■★	■★	✦★	■✠★	★○	★	★❖	★	■
2000	■★	★	■	■✠	★	■★	■★	✦★	■★	★○	★	★❖	★	■
2001	■★	★	■	★	★	■★	■★	✦★	■★	★○	★	★❖	★	■

2002	■★	★	■	■★	★	■★	■★	✦★	■★	★O	★	★❖	★	■
2003	■★	★	■	■★	★	■★	■★	✦★	■★	★O	★	★❖	★	■
2004	■★	★	■	■★	★	■★	■★	✦★	■★	★O	★	★❖	★	■
2005	■★	★	■	■★	★	■★	★	✦★	■★	★O	★	★❖	★	■
2006	■★	★	■	■★	★	■★	★	✦★	■★✠	★O	★	★❖	★	■
2007	■★	★	■	■★	★	★	★	✦★	■★	★O	★	★❖	★	■
2008	■★	★	■	■★	★	★	★	✦★	■★	★O	★	★❖	★	■
2009	■★	★	■	■★	★	★	★	✦★	■★	★O	★	★❖	★	■
2010	■★	★	■	■★	★	★	★	★	■★	★O	★	★❖	★	■
2011	■★	★	■	■★	★	★	★	★	■★	★O	★	★❖	★	■

Notes

■ - National statistical agency, aggregate data, public web database.
✦ - National census/statistical yearbook, accessed via library resources (book/microfilm).
✠ - National census/labor force survey microdata, accessed via IPUMS/ other online database

◆ - Eurostat Yearbooks/ Focus/Rapid Reports
★□ - Eurostat web database

O - (Obstfeld & Peri, 1998)
❖ - Unpublished data, received through private correspondence with country statistical agency.

II. Age Structure

AT: 1971: **"**Population Census, time series 1971-2001 by regional criteria," Census (Statistics Austria, n.d.)

BE, DE, FR, IT, NL:
1970: "Table 5, Population par groups d'age, total," pp. 148-155 (Eurostat, 1973)

CA: 1971: Census, Statistics Canada, accessed via IPUMS-I.

CH: 1970: "4.10. Wohnbevölkerung der Kantone nach Fünfjahresklassen und Geschlecht," pp. 60-61 (Eidgenössisches Statistisches Amt Switzerland 1971)

DK: 1970: **"**Population 1. January by region, age and time," (Statistics Denmark, n.d.)

ES: 1971: Census (Spanish Statistical Office, n.d.)

FI: 1970: "1. (001) Population by main language (Finnish, Swedish), education and age by 5 years; whole country, provinces, regional planning areas, city regions, Coast Region of Vaasa, communes and localities," pp. 52-59, (1970 Census)

SE: 1970: "Population by region, age and period" (Swedish Statistical Office, n.d.)

UK: 1971: Annual population data not publicly available, kindly made available by Bob Watson at the U.K. Office for National Statistics.

US: 1970: Census, U.S. Census Bureau, accessed via IPUMS-USA.

III. Educational Attainment

We assign years of schooling equivalent to educational attainment of the population reported in each source, then use these values to approximate a region's average years of schooling. There are a number of country specific sample universe issues, discussed briefly below for each country. An addendum is available upon request that provides detailed breakdowns of years of schooling classifications specific to each country's system.

AT: 1971: Universe restricted to population aged 15+ not in school. 1971 Census, National Bureau of Statistics, accessed via IPUMS-I.

BE: 1970: Universe is population aged 14+ not in school. 1970 Census, **"**Table 21. Population de 14 Ans et Plus, Ne Suivant Plus Un Enseignement de Plein Exercice, Par Sexe et Genre D'enseignement Suivi en 1961 et 1970. Chiffres par Province, Arrondissement et Region Linguistique."

CA: 1971: Universe restricted to population aged 15+ not in school. 1971 Census, Statistics Canada, accessed via IPUMS-I.

CH: 1970: Universe restricted to population aged 15+ not in school. 1970 Census, Federal Statistical Office, accessed via IPUMS-I

DE: 1970: Universe adjusted to approximate those not currently in school. "5. Wohnbevölkerung nach höchstem Schulabschluß," pp. 98-101, (Statistisches Bundesamt Bundesrepublik Deutschland, 1970a)

DK: Universe is population aged 16–59. Adjusted to reflect 1971 levels based on national trend. "Table 52. Population aged 16-59 years by size-class of urban areas in municipalities, by county and by level of completed vocational education" (Europe—Denmark, 1970).

ES: Universe restricted to population aged 15+ in 1971 (25+ in 1981). 1981 Census, National Institute of Statistics, accessed via IPUMS-I.

FI: "Population aged 15 or over by level of education, municipality, gender and age 1970-2011," (Finland Bureau of Statistics, 1970).

FR: 1968: Census, National Institute of Statistics and Economic Studies, Accessed via IPUMS-I.

IT: 1971: Universe adjusted to approximate those not currently in school. "Tavola 7.1.1- Popolazione residente in età da 6 anni in poi per grado di istruzione, regione e ripartizione geografica ai censimenti - Censimenti 1951-2001 (valori assoluti in migliaia e composizione percentuale" (Istat, n.d.)

NL: 1971: Universe is population aged 14+ not in school. **"**Tabel 1 - Bevolking van 14 jaar en ouder geen dagonderwijs volgend naar onderwijsniveau en geslacht" (DANS n.d.)

SE: 1970: Universe is population aged 16-59. "Tabell 15, Befolkningen i åldern 16—59 år efter högsta utbildning och kön. länsvis år 1970," pp. 160-163 (Statistiska centralbyrån Sweden, 1973b).

UK: 1978: The universe is persons born between 1919 and 1963 (people between the ages of 16-60 in 1979). Adjusted to reflect 1971 levels based on national trend. Labor Force Survey microdata (ONS, n.d.)

US: 1970: Universe restricted to population aged 15+ not in school. 1970 Census, U.S. Census Bureau, accessed via IPUMS-USA

IV. GDP

Each country's GDP is converted to comparable purchasing power parity (PPP) in 1970 U.S. dollars, using Penn World Tables.

AT: 1971: "Brutto-Inlandsprodukt 1971," pg. 61 (Geldner and Jeglitsch, 1976)

BE, DE, FR, IT, NL: 1970: "Gross domestic product per inhabitant (1970)" (Statistical Office of the European Communities, 1973).

CA: 1970: "TABLE I. Provincial Income and Provincial Gross Domestic Product," pp. 2-23 **(**Statistics Canada, 1988).

CH: 1970: "Volkseinkommen der Kantone 1965-1985 (in Mio. Franken, zu laufenden Preisen) / Revenu des cantons 1965-1985 (en millions de francs, aux prix courants)" (Bundesamt fur Statistik Schweiz 1986)

DK: 1983: "Gross income by region and time," (Statistics Denmark, n.d.)

ES: 1980: "Spanish Regional Accounts. Base 1986. Series 1980-1996: Gross domestic product per region (GDPR): Gross domestic product (current prices) by autonomous communities and provinces and year" (Instituto Nacional de Estadistica 2012)

FI: 1975: "234. Number, income and taxes of individuals by province in 1975," pg. 237 (Finland Tilastokeskus, 1977)

SE: 1973: "Tab. 396: Income earners by total income in 1973 and other persons aged 15 and above at the beginning of 1974, by county," (Statistiska centralbyrån, 1974b)

US: "Gross Domestic Product (GDP) by State," (BEA n.d.)

UK: 1977: "2. GDP by county for selected years between 1977-1996: file gdpcty7796." (ONS n.d.)

V. Household Size and Ownership

AT: 1971 (household size); 1981 (home ownership): 1971, 1981 Censuses, National Bureau of Statistics, accessed via IPUMS-I.

BE: 1970: "5. LOGEMENTS PRIVÉS HABITÉS À TITRE DE RÉSIDENCE PRINCIPALE PAR LE PROPRIETAIRE, LE COPROPRIÉTAIRE OU L'USUFRUITIER, COMPARAISON ENTRE 1961 ET 1970" (Institut national de statistique, 1973); 15. MÉNAGES PRIVES SELON LA TAILLE. COMPARAISON ENTRE 1961 ET 1970 (suite) (Institut national de statistique, 1973).

CA: 1971: **"**Table 4.24 Households by type, 1961, 1966, and 1971" (Statistics Canada, 1975); **"**Table 4.27 Families and persons per family, by province, 1961, 1966, 1971," 171 (Statistics Canada, 1975).

CH: 1970: Census, Federal Statistical Office, accessed via IPUMS-I

DE: "2. PRIVATHAUSHALTE NACH KREISFREIEN STAEDTEN, LANDKREISEN UND HAUSFALTSGROESSE" **(**Statistisches Bundesamt Bundesrepublik Deutschland, 1970b); "Bewohnte Wohnungen ohne Zweit- und von Angehörigen ausländischer Streitkräfte privatrechtlich gemietete Wohnungen" **(**Statistisches Bundesamt Bundesrepublik Deutschland, 1970c)

DK: 1970: "Table 5, Number of dwellings with: (Table 5)"; "Table 7, Home Ownership - Type of Tenancy" (Europe—Denmark, 1970).

ES: 1970: Census 1970, (Instituto Nacional de Estadistica, n.d.)

FI: 1975: "113. Dwelling units by housing density, number of," pp. 128-9 (Finland Bureau of Statistics, 1977) (Finland Tilastokeskus, 1977)

FR: 1986: Census, National Institute of Statistics and Economic Studies, Accessed via IPUMS-I.

IT: 1971: (Istituto centrale di statistica [Italy])

NL: 1971: "Table 28, A6A, 14th General Census: annex housing census, February 28, 1971" (DANS, 2011); "Table 35, A6A, 14th General Census: annex housing census, February 28, 1971" (DANS, 2011); "Households and families by size and county, per 1000 households, respectively. per 1000 households in each province, February 28, 1971" (DANS, 2011); "Household composition and singles (def.1960) per county, per 1000 households in each province, 2-28-1971" (DANS 2011).

SE: 1970: "1. Dwellings by type of building, type of ownership, year of construction, size and quality group. Co-operating communes and localities" **(**National Central Bureau of Statistics Sweden, 1973); "2. Dwellings by type of building, type of ownership, year of construction, size and quality group. Individual communes in units of co-operating communes" **(**National Central Bureau of Statistics Sweden, 1973b).

UK: 1971, Great Britain Small Area Statistics (Casweb, n.d.)

US: 1970 Census, U.S. Census Bureau, accessed via IPUMS-USA.

VI. Industry Structure

The Eurostat Yearbooks report industry breakdowns according to the Nomenclature des Activités Économiques dans la Communauté Européenne (NACE) 1970 codes. The data are broken down into the following categories:

Agriculture

Industry

- Energy
- Mining (includes chemicals)
- Construction
- Metals Manufacturing
- Other Manufacturing

Service Sector

Commerce
Transport
Credit
Administration
Other service

For countries not in the Eurostat Yearbooks, we create categories that correspond to the NACE 1970 codes. We combined industries to fall into three sectors: the *primary, secondary* and *tertiary* sectors. *Primary* includes the agriculture, energy and mining sectors. *Secondary* includes metals and other manufacturing and construction. The *tertiary* sector includes all service sector employment.

AT: 1971: National Bureau of Statistics, Austria, Accessed via IPUMS-International.

BE, DE, FR, NL, IT:
"Table 11. Emploi par sexe et secteur d'activite economique en 1968 et 1973," 198-205, (Eurostat, 1974)

CA: Industry data are for firms having 20 or more employees in any month of the year and are from 1971-2 (Statistics Canada, 1971; Statistics Canada, 1972). Agriculture and service sector data come from the 1971 census. 1971 Census, Statistics Canada, accessed via IPUMS-I.

CH: 1970: "5.06 Erwerbsgruppen nach Kantonen," pg. 74-5 (Statistiska centralbyrån, 1971).

DK: 1971: "Employment Structure by Industry (Table 9)" (Europe—Denmark, 1970).

ES: 1970: Census 1970, "12. Economically active population by occupation," (Instituto Nacional de Estadistica, n.d.)

FI: 1972: "22. Economically active population by industry, by provinces on 31 Dec. 1970," (Finland Tilastokeskus, 1972)

SE: 1970: **"**Tab 25. Economically active population by industry, by county", pg. 49. (Statistiska centralbyrån 1970)

UK: 1981 data from the Special Workplace Statistics are more detailed than the 1971 Small Area Statistics, and include breakouts of employment in energy, metals manufacturing, and credit. 1981 employment from the Special Workforce Statistics is scaled downward to reflect 1971 shares in agriculture, construction, industry and services from the Small Area Statistics. The Special Workplace Statistics exclude Scotland. A more detailed industry breakdown for Scottish NUTS-2 regions is estimated using industry shares for the larger NUTS 1 region of Scotland given in Eurostat (1973).
1971, Great Britain Small Area Statistics (Casweb, n.d.)
1981, Census of Population, Special Workplace Statistics (nomis, n.d.)

US: Adjustments are made to make data comparable across NAICS to SIC codes.
1970-2011: "Total full-time and part-time employment by industry (SA25)" (BEA n.d.)

VII. Migration

By migration, we refer to internal migration from one region to another within the same country. The "net migration rate" is defined as the annual net inflow (i.e. inmigration – outmigration) of people normalized by population of the region. Turnover migration is the average of inmigration and outmigration of a region normalized by the population of the region.

Migration data can be reported over varying intervals (i.e. 1 year, 5 year). Annualizing migration data that occurs over longer periods by simply taking the average is not going to be comparable with one-year flow data

because the average fails to account for return and continued migrations that occur within the five-year period. Migration over periods longer than one year is converted into an estimate of 12 month mobility as follows:

$$inmigration\_rate_r = \frac{\frac{inmigration_r}{years_r^{0.7}}}{pop_r}$$

Where *inmigration_rate* is the inmigration rate, *inmigration* is the number of inmigrations to region *r*, years is the number of years over which the migration occurred, and *pop* is population of the region. Outmigration is defined similarly. The adjustment is based on relationships observed in the United States and Canada. For further discussion on reconciling and translating migration data collected over different time intervals, see Rogers, Raymer, and Newbold (2003).

AT: 1976 – 1981: "Austria, migrated at the age of 5 years and over by county of residence and place of origin (foreign), 1976-1981," (Austria, Central Statistical Office, 1990).

BE: 1973: "Table 8. Inter-regional migrations," pp. 174 (Eurostat 1975).

CA: 5 year inmigration is adjusted by dividing by 3.31, the ratio of 5 yr to 1 yr flows for Canada in the early eighties from Rogers, Raymer and Newbold (2003)
outmigration = inmigration – net interprovincial migration.
1966-1971 (Outmigration): Census, Statistics Canada, accessed via IPUMS-I.
1971 (Net inter-provincial migration): **"**Table 051-0004 Components of population growth, Canada, provinces and territories annual (persons)" (Statistics Canada, n.d.).

CH: Table for lifetime migration is rescaled downward using the adjustment factor of the share of immigration that occurred in 1 year.
1970: "7.03 Wohngebiet und Heimatkanton" (Statistiska centralbyrån, 1971); "7.12 Heutige Wohnbevolkerung nach Wohnortsklasse vor 1 und vor 5 Jahren" (Statistiska centralbyrån, 1971).

DE: 1970: "10. Wanderungen 1970 nach kreisfreien Stadten und Landkreisen," pp. 40-50 and "11. Wanderungen zwishcen ausgewahlten Kreisen des Bundesgebietes 1970," pp. 51-118. (Statistisches Bundesamt Bundesrepublik Deutschland 1970d).

DK: 1974: "Table 8. Inter-regional migrations," pp. 176 (Eurostat, 1975).

ES: 1971 – 1975: "Spain, inter-regional migration, 1971-75," (Instituto Nacional de Estadística, 1978)

FI: 1970: "Table 55: Internal migration of population between different provinces in 1970," p. 77 (Finland Tilastokeskus, 1972).

FR: 1968 – 1975: "Tableau 1: Migrations interregionales de population totale entre le 1er janvier 1968 et le 20 fevrier 1975 et personnes en provenance de hors metropole," pp. 55-56 (Statistique generale de la France).

IT: 1973: "Table 8. Inter-regional migrations," pp. 174-5 (Eurostat, 1975).

NL: 1973: "Table 8. Inter-regional migrations," pp. 175 (Eurostat, 1975).

SE: 1973: "Sweden internal migration, 1973," pp. 14-51 (Official Statistics of Sweden 1974).

UK: 1971: "Table 1A Migrants within one year preceding census by area of former usual residence, area or usual residence at census and sex," various pages across volumes (Office of Population Censuses and Surveys, 1975); "Table 2A Migrants within one year preceding census by area of former usual residence (region), area of usual residence (regions and conurbations in the rest of Great Britain) at census and sex," various pages across volumes (Office of Population Censuses and Surveys, 1975); "Table 1A. Migrants within one year preceding census by area of former usual residence, area or usual residence at census and sex," pp. 1-2, (General Register Office (Edinburgh), 1977); "Table 1A Migrants within one year preceding census by area of former usual residence, area or usual residence at census and sex," pp. 1-2, (General Register Office [Edinburgh], 1977); "Table 2B Migrants within

one year preceding census by area of former usual residence (Scotland), area of usual residence (regions and conurbations in England and Wales) at census and sex, pp. 3-6 (General Register Office [Edinburgh], 1977)

US: 1965-1970: 1970 Census, Form 2, U.S. Census Bureau, accessed via IPUMS-USA.
1975-1980: 1980 Census, U.S. Census Bureau, accessed via IPUMS-USA.
1985-1990: 1990 Census, U.S. Census Bureau, accessed via IPUMS-USA.
1995-2000: 2000 Census, U.S. Census Bureau, accessed via IPUMS-USA.
2000-2011: American Community Survey, U.S. Census Bureau, accessed via IPUMS-USA.

VIII. Motorways

The Eurostat definition of "motorway" is "a road that is especially designed and built for motor traffic, which does not serve properties bordering on it, and which: is provided, except at special points or temporarily, with separate carriageways for traffic in two directions, separated from each other, either by a dividing strip not intended for traffic, or exceptionally by other means; has no crossings at the same level with any road, railway or tramway track, or footpath; is especially sign-posted as a motorway and is reserved for specific categories of roadmotor vehicles."

Sources by country:

AT, BE, CH, DE, DK, ES, FI, FR, IT, NL, SE, UK:
1978-2012: " Road, rail and navigable inland waterways networks by NUTS 2 regions (tran_r_net)," (European Commission, n.d)

CA: Motorways for Canada is reported highway miles.
1978: (Census and Statistics Office Canada et al., 1979)

US: Motorways for the United States is the sum of municipal, rural and federal highway mileage.
1978: "Table 1104. Municipal and Rural Highway Mileage, 1970 to 1978, and Federal Aid Highway Mileage, 1978-States," (United States, 1980)

IX. Urban Density

Each region, *r*, is split into "centroids" (roughly squares of 1x1 km). Population and density are known for each centroid. We classify a centroid as urban if its density is greater than a threshold of 500 people per square km. We aggregate all centroids in a region as follows to determine the region's urban density, ***density***:

$$density_r^{500} = \frac{\sum_{i \in r} population_i \times 1(density_i > 500)}{\sum_{i \in r} population_i}$$

Source of data: (CIESIN, IFPRI, The World Bank, CIAT, n.d.)

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APPENDIX B: DERIVATIONS

In this appendix, we establish how our measure of hysteresis is related to persistence of a series. To simplify the argument, suppose that unemployment is an AR(1) process: $U_t = (1-\rho)U_{SS} + \rho U_{t-1} + e_t$ where U_t is a measure of unemployment rate, U_{SS} is the steady state level of unemployment, and e_t is an error term.

Suppose there is an impulse $\Delta = U_\tau - U_{SS}$ at time τ and we would like to know how much convergence back to the steady state is achieved after N periods. Given the data generating process, $U_\tau - U_{\tau+N} = U_\tau - \{U_{SS} + \rho^N(U_\tau - U_{SS})\} = (1-\rho^N)(U_\tau - U_{SS}) = (1-\rho^N)\Delta$ is by how much the gap from the impulse to the steady state is closed. After normalizing the gap by the size of the impulse, one obtains

$$\frac{U_\tau - U_{\tau+N}}{U_\tau - U_{SS}} = (1-\rho^N)$$

While theoretically this is an appealing measure, $\Delta = U_\tau - U_{SS}$ can be very small or even negative for some regions. Since $U_{\tau+N} - U_\tau$ and $U_\tau - U_{SS}$ are relatively small (no more than 0.1 for most cases), one can use

$$\begin{aligned}\frac{1+U_\tau - U_{\tau+N}}{1+U_\tau - U_{SS}} &= \frac{U_\tau - U_{\tau+N}}{U_\tau - U_{SS}} + \frac{(U_\tau - U_{\tau+N}) - (U_\tau - U_{SS})}{(U_\tau - U_{SS})(1+U_\tau - U_{SS})} = (1-\rho^N) + \frac{(1-\rho^N)\Delta - \Delta}{\Delta(1+\Delta)} \\ &= (1-\rho^N) - \frac{\rho^N}{(1+\Delta)}.\end{aligned}$$

Since Δ is small,

$$\frac{1+U_\tau - U_{\tau+N}}{1+U_\tau - U_{SS}} \approx 1 - 2\rho^N.$$

In the data, the distribution of this ratio is somewhat skewed which can lead to estimates sensitive to a handful of observations. To make it more symmetric, we take the following transformation:

$$\begin{aligned}-\log\left(\frac{1+U_\tau - U_{\tau+N}}{1+U_\tau - U_{SS}}\right) &= -\log(1+U_\tau - U_{\tau+N}) + \log(1+U_\tau - U_{SS}) \\ &\approx \log(1+U_{\tau+N} - U_\tau) + \log(1+U_\tau - U_{SS})\end{aligned}$$

where the last approximation follows from $\log(1+x) \approx -\log(1-x)$. By combining the last two equations, we obtain

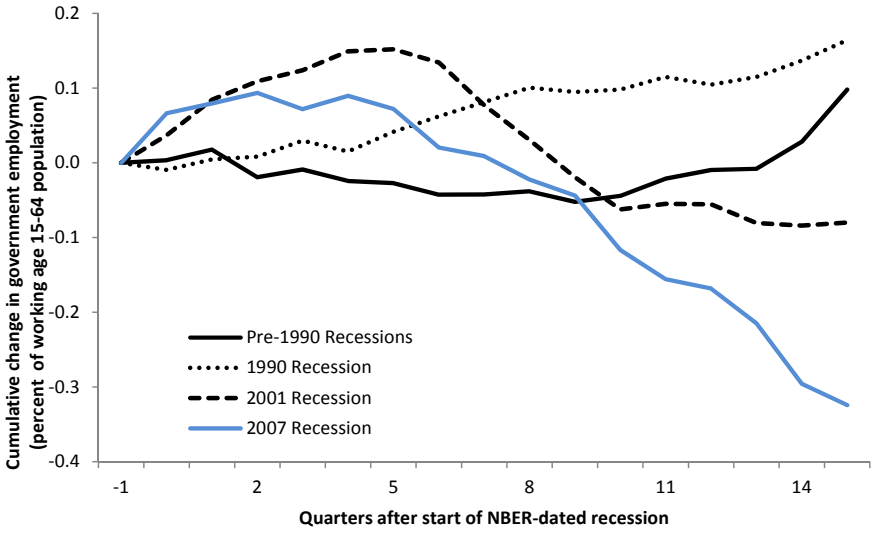
$$\log(1+U_{\tau+N} - U_\tau) + \log(1+U_\tau - U_{SS}) \approx -\log\left(\frac{1+U_\tau - U_{\tau+N}}{1+U_\tau - U_{SS}}\right) \approx -\log(1-2\rho^N) \approx 2\rho^N.$$

Hence, our measure of hysteresis $h \equiv \log(1+U_{1990} - U_{1980}) + \log(1+U_{1980} - U_{1970})$ can be directly mapped to the persistence of unemployment.

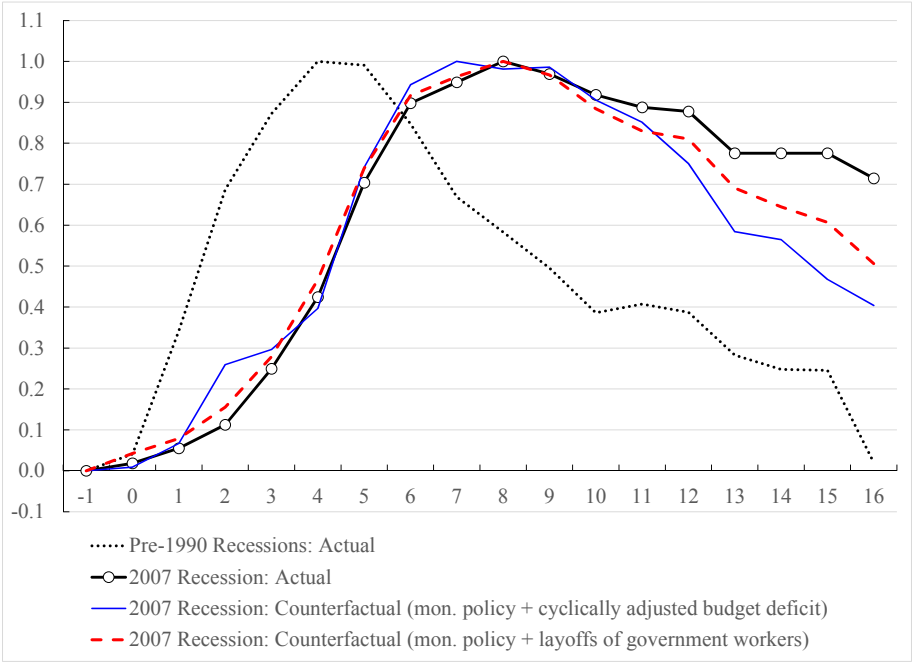
APPENDIX C: ADDITIONAL FIGURES AND TABLES

APPENDIX FIGURE C1: MEASURING FISCAL POLICY THROUGH GOVERNMENT EMPLOYMENT

Panel A: Historical Differences in Government Employment to Population Ratios

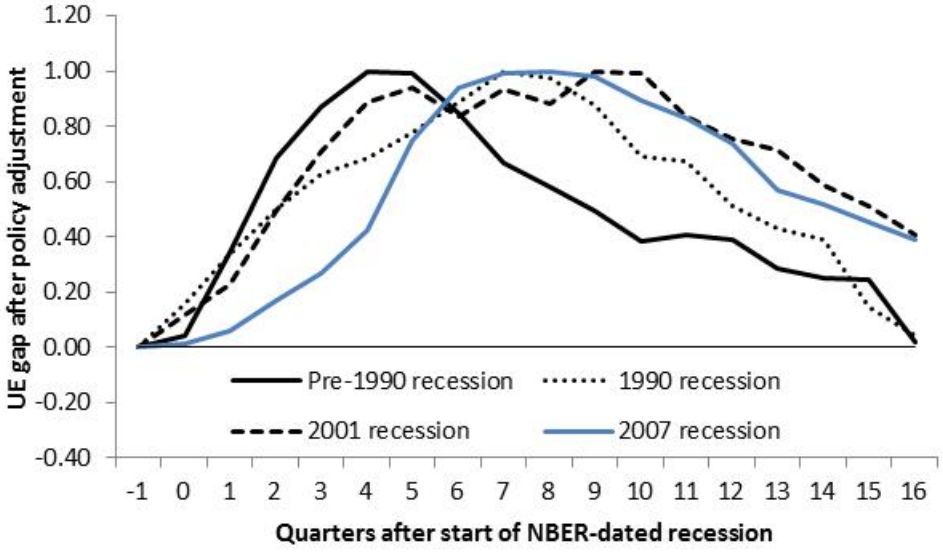


Panel B: Robustness of Contribution of Monetary and Fiscal Policies to 2007 UE Persistence



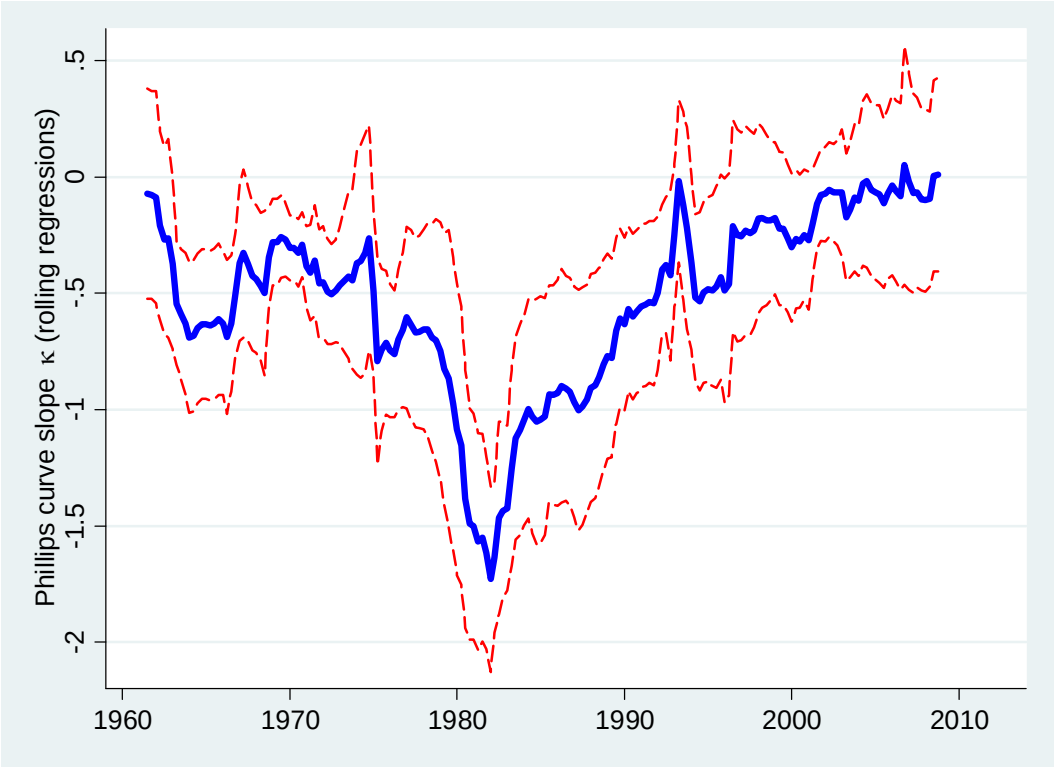
Notes: The top panel plots the path of combined federal, state and local government employment (relative to U.S. population 16 years old and over) for 1990, 2001 and 2007 recessions as well as the average path over pre-1990 recessions. The bottom panel plots the actual path of unemployment in the 2007 recession (normalized by its peak rise), the normalized path of unemployment in pre-1990 recessions, and two estimates of the counterfactual normalized path of unemployment assuming monetary and fiscal policies in the 2007 recession had followed their pre-1990 paths. In one case, fiscal policy is measured using the cyclically adjusted federal budget balance as a share of potential GDP (as in the text). In the other, fiscal policy is measured using total government employment relative to population. For the latter we assume that changes in government employment affect private employment by a factor of 0.5 (i.e. one new government job also creates half a private sector job).

APPENDIX FIGURE C2: ROBUSTNESS TO SMALLER FISCAL MULTIPLIERS



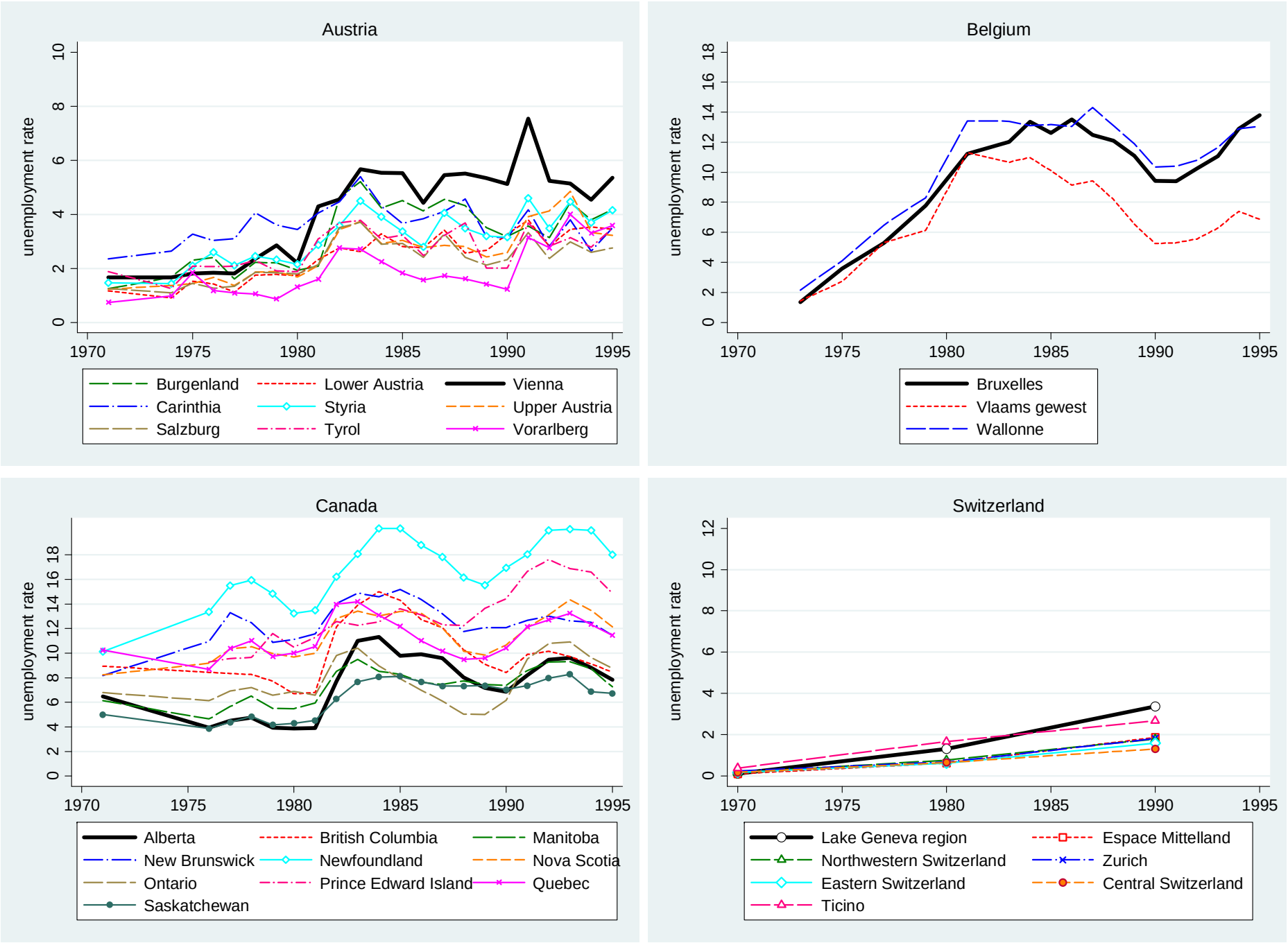
Notes: The figure plots counterfactual normalized paths of unemployment for 1990, 2001 and 2007 recessions assuming fiscal and monetary policies in each had followed pre-1990 patterns. Changes in fiscal balances are assumed to have a multiplier of 0.5.

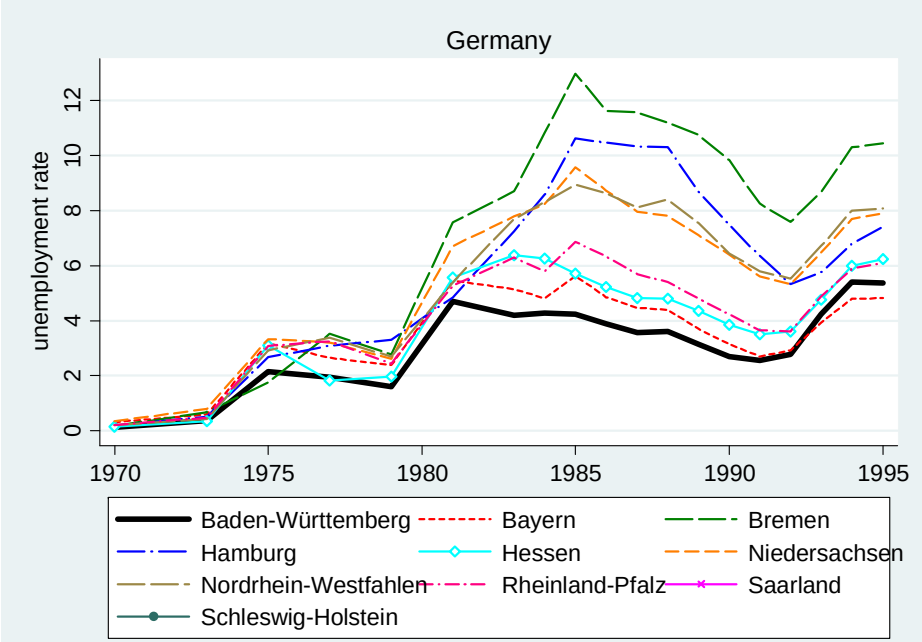
APPENDIX FIGURE C3: ROLLING ESTIMATES OF THE SLOPE OF THE PHILLIPS CURVE

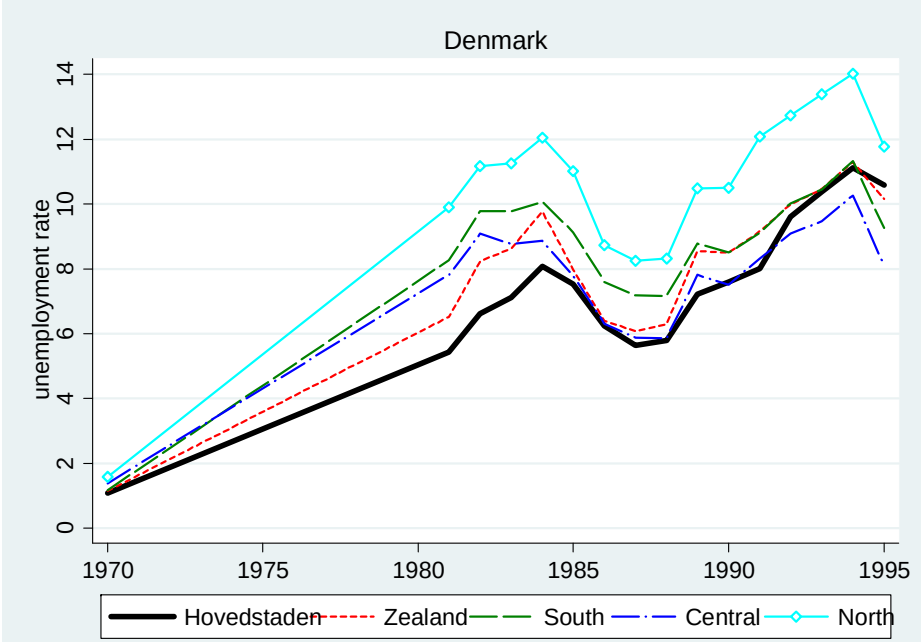


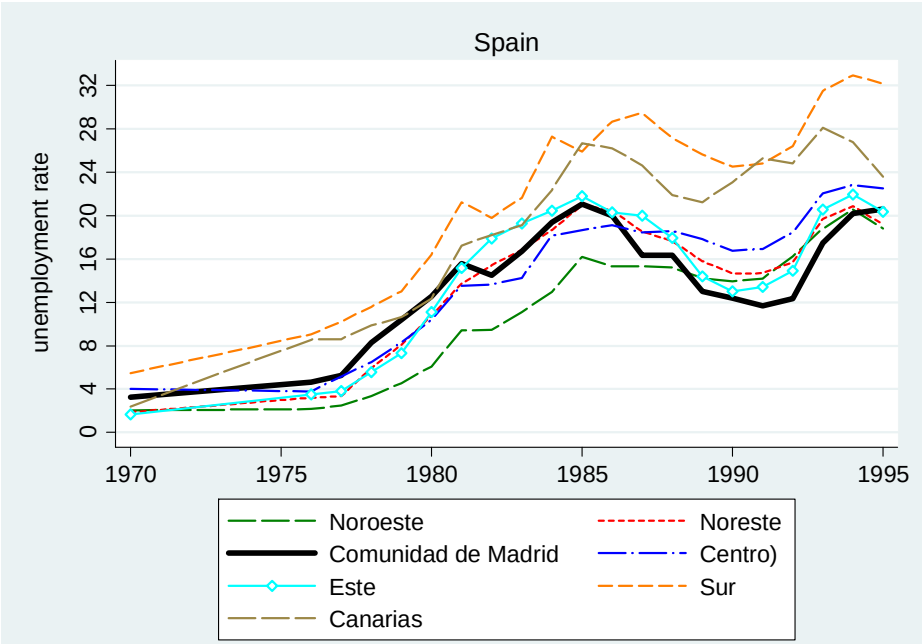
Notes: The figure plots 10-year rolling estimates of the slope of the expectations-augmented Phillips curve. The dependent variable is quarterly inflation minus expected inflation, where the latter is defined as the average over quarterly inflation rates in the previous four quarters. The right-hand side is the quarterly unemployment rate.

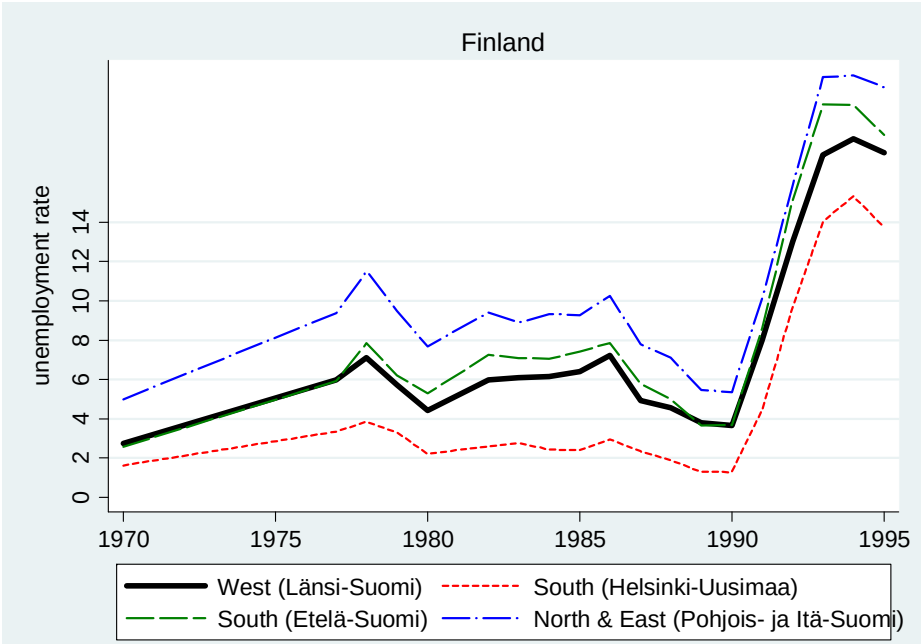
APPENDIX FIGURE C4. TIME SERIES OF REGIONAL UNEMPLOYMENT RATES BY COUNTRY.

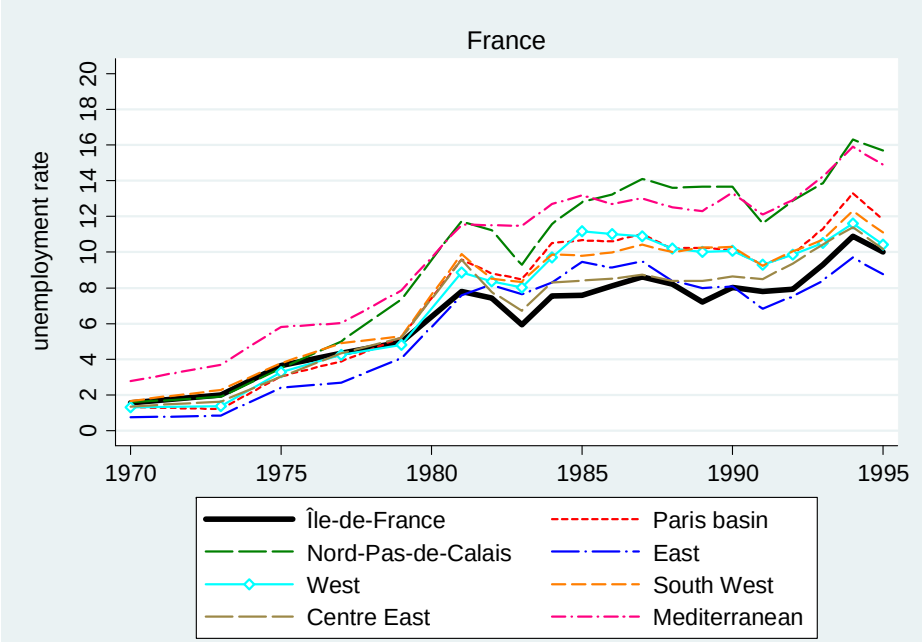


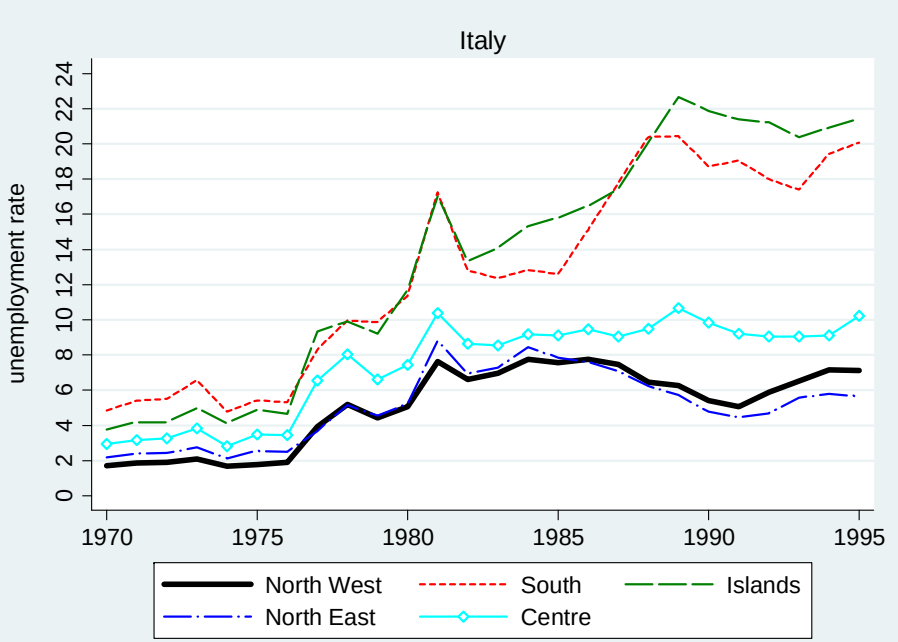

Germany
unemployment rate
0
2
4
6
8
10
12
1970
1975
1980
1985
1990
1995
Baden-Württemberg
Bayern
Bremen
Hamburg
Hessen
Niedersachsen
Nordrhein-Westfahlen
Rheinland-Pfalz
Saarland
Schleswig-Holstein

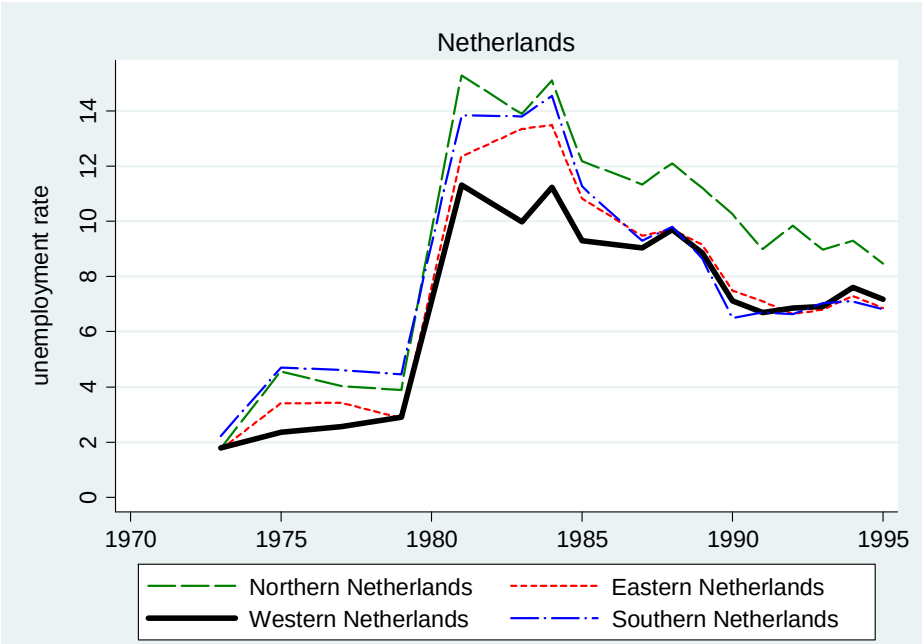

Denmark
unemployment rate
0
2
4
6
8
10
12
14
1970
1975
1980
1985
1990
1995
Hovedstaden
Zealand
South
Central
North

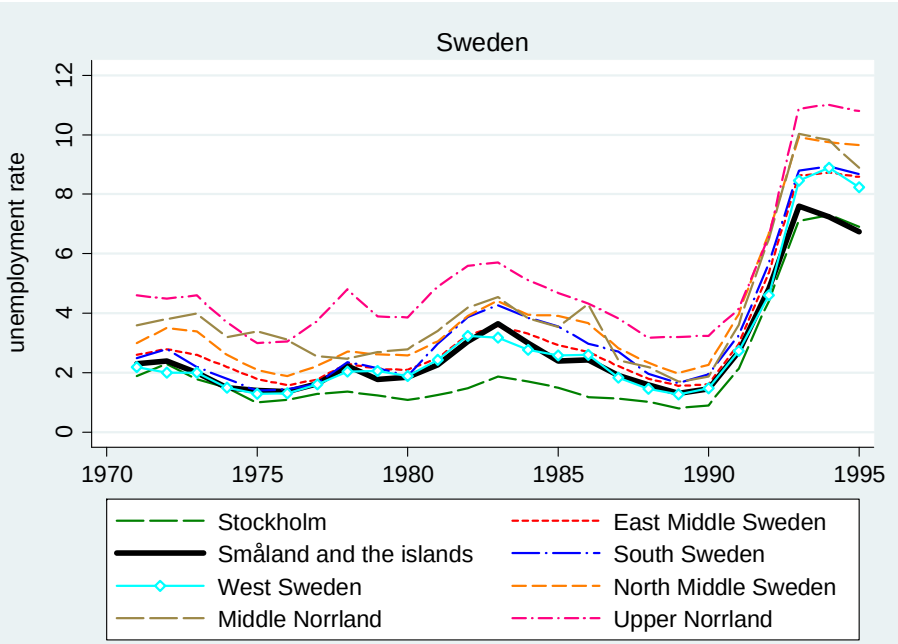

Spain
unemployment rate
0
4
8
12
16
20
24
28
32
1970
1975
1980
1985
1990
1995
Noroeste
Noreste
Comunidad de Madrid
Centro)
Este
Sur
Canarias

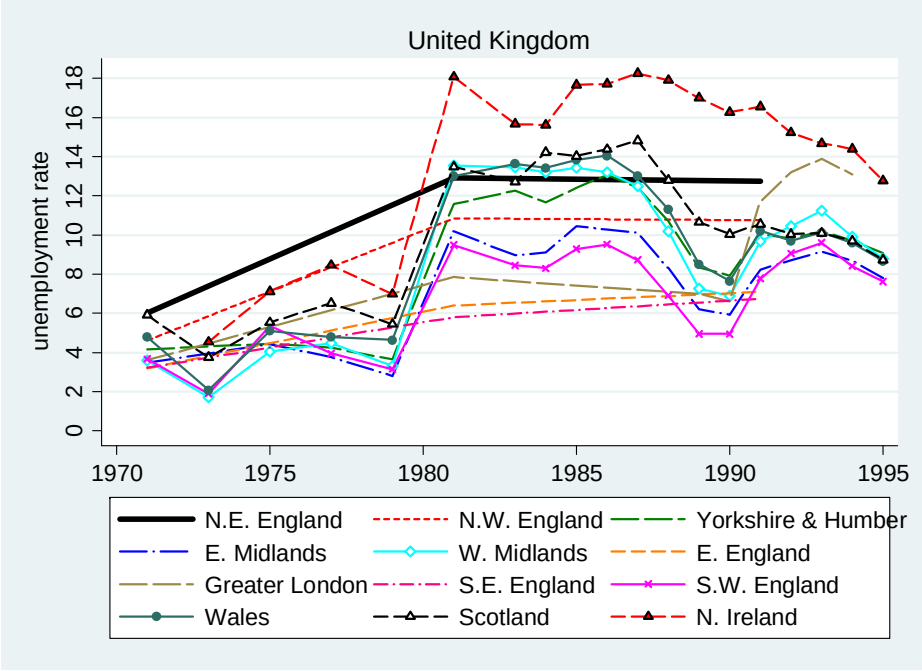

Finland
unemployment rate
0
2
4
6
8
10
12
14
1970
1975
1980
1985
1990
1995
West (Länsi-Suomi)
South (Helsinki-Uusimaa)
South (Etelä-Suomi)
North & East (Pohjois- ja Itä-Suomi)

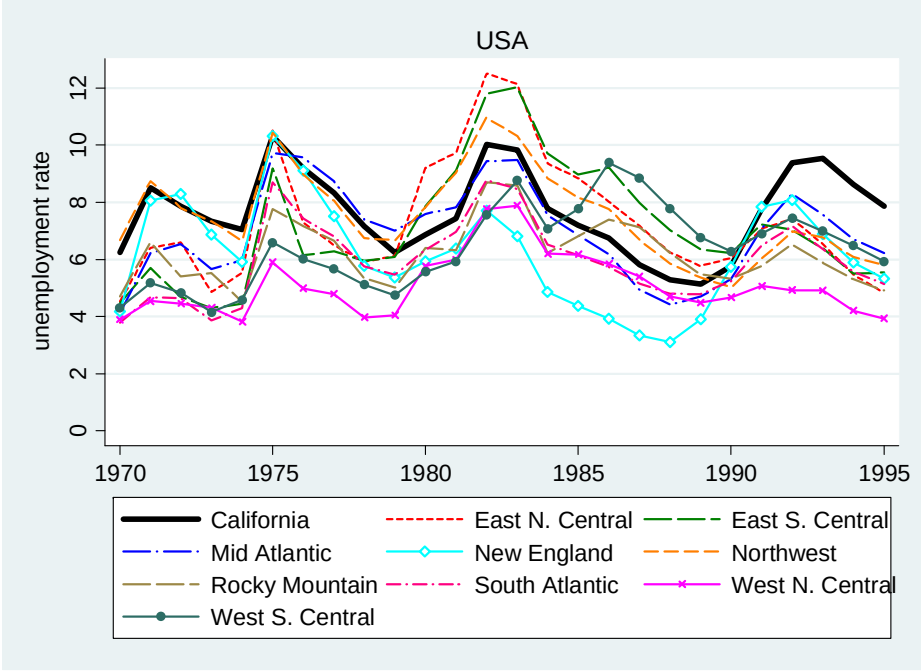

France
unemployment rate
0 2 4 6 8 10 12 14 16 18 20
1970 1975 1980 1985 1990 1995
Île-de-France
Nord-Pas-de-Calais
West
Centre East
Paris basin
East
South West
Mediterranean


Italy
unemployment rate
0 2 4 6 8 10 12 14 16 18 20 22 24
1970 1975 1980 1985 1990 1995
North West
North East
South
Centre
Islands


Netherlands
unemployment rate
0 2 4 6 8 10 12 14
1970 1975 1980 1985 1990 1995
Northern Netherlands
Western Netherlands
Eastern Netherlands
Southern Netherlands


Sweden
unemployment rate
0 2 4 6 8 10 12
1970 1975 1980 1985 1990 1995
Stockholm
Småland and the islands
West Sweden
Middle Norrland
East Middle Sweden
South Sweden
North Middle Sweden
Upper Norrland


United Kingdom
unemployment rate
0
2
4
6
8
10
12
14
16
18
1970
1975
1980
1985
1990
1995
N.E. England
N.W. England
Yorkshire & Humber
E. Midlands
W. Midlands
E. England
Greater London
S.E. England
S.W. England
Wales
Scotland
N. Ireland


USA
unemployment rate
0
2
4
6
8
10
12
1970
1975
1980
1985
1990
1995
California
East N. Central
East S. Central
Mid Atlantic
New England
Northwest
Rocky Mountain
South Atlantic
West N. Central
West S. Central

APPENDIX TABLE C1. DESCRIPTIVE STATISTICS BY COUNTRY

Variable	Country														All
	AT	BE	CA	CH	DE	DK	ES	FI	FR	IT	NL	SE	UK	US	
Hysteresis h	2.27	5.51	0.81	1.87	4.13	6.97	12.89	1.94	7.57	7.36	4.82	-0.54	5.44	0.60	4.40
	(1.21)	(2.74)	(1.35)	(0.70)	(1.74)	(0.92)	(4.03)	(0.81)	(1.55)	(5.62)	(1.42)	(0.33)	(2.18)	(1.18)	(4.13)
Turnover migration rate	0.71	1.28	1.16	0.93	1.71	1.83	0.95	2.13	2.22	1.09	2.12	1.77	3.02	2.78	1.69
	(0.32)	(0.92)	(0.69)	(0.27)	(0.70)	(0.43)	(0.32)	(0.49)	(0.47)	(0.27)	(0.62)	(0.35)	(1.29)	(0.93)	(0.93)
Population share 0-24 years	38.27	38.58	48.02	38.74	36.15	39.02	43.00	43.19	39.86	38.90	44.13	35.78	38.27	45.98	40.56
	(6.43)	(3.42)	(2.30)	(2.69)	(2.49)	(2.20)	(2.84)	(3.05)	(3.11)	(5.45)	(2.44)	(1.09)	(1.81)	(2.20)	(4.72)
Population share 55+ years	25.66	24.60	16.07	21.64	25.05	23.51	19.03	19.73	24.48	22.28	19.41	25.99	25.18	19.23	22.28
	(5.33)	(3.10)	(1.72)	(1.08)	(1.90)	(0.72)	(2.11)	(1.56)	(2.75)	(3.35)	(2.45)	(1.97)	(2.50)	(2.15)	(3.89)
Trust	-2.72	-2.46	-2.11	-1.55	-2.20	-0.00	-3.26	-1.46	-3.57	-2.92	-1.13	-1.02	-2.26	-2.76	-2.10
	(0.78)	(0.65)	(0.17)	(0.32)	(0.96)	(0.13)	(0.50)	(0.17)	(0.47)	(0.56)	(0.20)	(0.25)	(0.69)	(0.23)	(1.06)
Years of schooling	9.56	8.17	9.51	10.67	8.64	9.57	3.92	7.89	6.60	4.98	9.24	9.29	9.31	11.73	8.51
	(0.39)	(0.33)	(0.59)	(0.20)	(0.29)	(0.27)	(0.89)	(0.47)	(0.41)	(0.67)	(0.36)	(0.47)	(0.25)	(0.51)	(2.09)
Share of employment in the primary sector	16.10	14.87	16.82	12.58	15.89	11.86	26.51	22.23	17.99	18.95	12.09	9.35	10.83	7.99	15.29
	(8.84)	(4.99)	(6.56)	(3.51)	(4.61)	(7.40)	(16.05)	(12.51)	(8.20)	(8.55)	(3.21)	(4.33)	(5.33)	(4.00)	(8.89)
Share of employment in the secondary sector	41.06	33.20	33.83	43.49	38.68	37.61	34.65	34.24	32.31	40.16	34.41	37.51	34.25	25.24	35.76
	(5.10)	(7.10)	(8.13)	(5.01)	(6.68)	(1.08)	(11.86)	(6.99)	(4.88)	(10.87)	(6.84)	(7.23)	(6.78)	(6.18)	(8.17)
Women's share in employment	38.05	29.52	34.21	33.98	33.38	35.92	19.31	42.63	36.62	26.11	23.19	35.20	36.68	37.26	33.00
	(3.48)	(3.12)	(1.56)	(1.23)	(3.88)	(3.30)	(4.94)	(3.24)	(3.59)	(4.28)	(1.58)	(3.48)	(2.25)	(1.36)	(6.82)
Household size	3.40	2.96	3.51	3.57	2.72	2.69	3.89	3.12	3.23	3.35	3.22	2.78	2.86	3.11	3.17
	(0.56)	(0.32)	(0.27)	(0.28)	(0.22)	(0.17)	(0.19)	(0.32)	(0.19)	(0.31)	(0.29)	(0.12)	(0.12)	(0.13)	(0.43)
Home ownership rate	49.88	55.58	70.54	31.70	37.92	51.95	79.03	58.99	43.79	58.04	36.14	53.67	48.30	63.19	52.77
	(19.62)	(12.51)	(5.55)	(6.79)	(10.35)	(18.70)	(4.17)	(5.19)	(6.88)	(8.48)	(10.04)	(9.03)	(11.51)	(7.21)	(16.22)
Net migration rate	-0.00	0.02	-0.01	-0.01	0.01	-0.00	-0.03	0.00	-0.01	0.03	-0.00	-0.00	-0.10	0.02	-0.01
	(0.24)	(0.64)	(0.70)	(0.80)	(0.28)	(0.23)	(1.21)	(1.44)	(0.61)	(0.67)	(0.30)	(0.20)	(1.04)	(0.90)	(0.72)
Share of urban population	37.99	63.71	54.78	59.11	68.38	36.79	50.36	25.24	51.63	53.85	75.03	20.56	76.45	67.80	52.98
	(35.89)	(18.63)	(15.92)	(12.52)	(20.89)	(33.91)	(26.75)	(28.70)	(22.54)	(18.06)	(20.11)	(27.09)	(25.02)	(14.56)	(28.14)
Log(Income p.c.) × 100	824.12	821.54	831.89	870.41	826.69	831.76	793.89	810.52	824.34	811.62	845.35	850.56	809.70	851.28	828.83
	(23.28)	(21.88)	(19.14)	(10.99)	(17.49)	(8.57)	(22.43)	(26.73)	(23.84)	(30.61)	(14.76)	(10.03)	(15.78)	(13.79)	(27.01)
Road density	-3.61	-2.83	-1.71	-3.29	-3.09	-3.44	-3.94	-6.42	-4.06	-3.76	-2.76	-5.24	-3.78	-0.94	-3.49
	(0.75)	(0.32)	(0.69)	(0.47)	(0.56)	(0.60)	(0.76)	(1.80)	(0.85)	(0.41)	(0.46)	(2.04)	(1.24)	(0.54)	(1.57)
City region	0.22	0.11	0.00	0.00	0.04	0.33	0.11	0.00	0.19	0.00	0.00	0.00	0.14	0.00	0.08
	(0.44)	(0.33)	(0.00)	(0.00)	(0.21)	(0.53)	(0.33)	(0.00)	(0.40)	(0.00)	(0.00)	(0.00)	(0.35)	(0.00)	(0.27)
Capital	0.22	0.11	0.36	0.25	0.00	0.33	0.11	0.22	0.19	0.09	0.17	0.18	0.14	0.00	0.17
	(0.44)	(0.33)	(0.51)	(0.47)	(0.00)	(0.53)	(0.33)	(0.48)	(0.40)	(0.29)	(0.40)	(0.41)	(0.35)	(0.00)	(0.38)
Number of regions	9	11	9	7	28	5	16	4	21	19	11	8	36	48	232

Notes: for each variable, the first row shows mean and the second row shows standard deviation. All moments are calculated using population weights (weights to regions within a country are proportional to population; equal weights to all countries) . The last column reports statistics for the pooled sample. The last rows reports the number of regions for each country.

APPENDIX TABLE C2. SENSITIVITY OF ESTIMATES TO ALTERNATIVE WEIGHTING.

	Baseline		No population weights		Population weights, no normalization at the country level		Huber robust regression	
	OLS (1)	FE (2)	OLS (3)	FE (4)	OLS (5)	FE (6)	OLS (7)	FE (8)
Turnover migration rate	0.37	0.29	0.23	0.29*	0.32*	0.35	0.18	0.13
	(0.27)	(0.22)	(0.14)	(0.16)	(0.19)	(0.23)	(0.12)	(0.13)
Population share 0-24 years	0.14	0.58***	0.30***	0.47***	0.41***	0.55***	0.20***	0.26***
	(0.13)	(0.12)	(0.09)	(0.10)	(0.11)	(0.11)	(0.07)	(0.09)
Population share 55+ years	0.17	0.42***	0.23***	0.36***	0.39***	0.45***	0.23***	0.24***
	(0.14)	(0.12)	(0.09)	(0.09)	(0.10)	(0.10)	(0.08)	(0.09)
Trust	0.16	-1.00***	-0.26	-0.53***	-0.40	-0.67**	-0.42***	-0.30*
	(0.33)	(0.32)	(0.21)	(0.20)	(0.25)	(0.29)	(0.13)	(0.15)
Controls								
Years of schooling	-0.98***	-1.57**	-0.93***	-0.99**	-0.80***	-1.24**	-0.82***	-0.86***
	(0.17)	(0.63)	(0.15)	(0.44)	(0.21)	(0.53)	(0.12)	(0.29)
Share of employment in the primary sector	0.04	-0.01	0.02	0.00	0.02	0.01	0.01	0.01
	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.02)	(0.02)
Share of employment in the secondary sector	-0.02	-0.06**	0.01	-0.00	0.01	-0.00	-0.02	-0.01
	(0.03)	(0.02)	(0.03)	(0.02)	(0.03)	(0.03)	(0.02)	(0.02)
Women's share in employment	-0.18***	-0.23***	-0.18***	-0.17***	-0.21***	-0.26***	-0.11***	-0.15***
	(0.04)	(0.08)	(0.03)	(0.06)	(0.05)	(0.08)	(0.02)	(0.04)
Household size	-0.08	-2.13*	-0.26	-0.51	0.16	-0.52	0.90*	0.04
	(0.76)	(1.18)	(0.68)	(0.89)	(0.80)	(1.08)	(0.49)	(0.73)
Home ownership rate	-0.05***	-0.03	-0.06***	-0.08***	-0.05***	-0.05*	-0.07***	-0.08***
	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)	(0.01)	(0.02)
Net migration rate	-0.34	-0.10	-0.07	-0.03	-0.35*	-0.25	-0.01	0.06
	(0.27)	(0.18)	(0.17)	(0.16)	(0.20)	(0.20)	(0.14)	(0.14)
Share of urban population	0.01	0.04***	0.03***	0.03***	0.04***	0.05***	0.03***	0.02***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Log(Income p.c.) × 100	-0.04***	-0.01	-0.04***	-0.04***	-0.05***	-0.03*	-0.04***	-0.04***
	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)
Road density	0.44**	0.44***	0.16	0.34**	0.09	0.48***	0.16	0.31***
	(0.21)	(0.14)	(0.11)	(0.13)	(0.15)	(0.18)	(0.10)	(0.11)
City region	3.33***	0.47	3.61***	2.12**	3.18***	1.39	2.90***	2.50***
	(0.63)	(0.92)	(0.72)	(1.04)	(0.91)	(1.20)	(0.75)	(0.78)
Capital	-0.01	0.35	0.13	-0.09	0.04	0.65	-0.13	0.32
	(0.59)	(0.46)	(0.46)	(0.50)	(0.50)	(0.56)	(0.60)	(0.61)
Observations	232	232	232	232	232	232	232	232
R-squared	0.71	0.87	0.75	0.84	0.84	0.89	0.83	0.87

Notes: The table shows results for baseline specification estimated with different weighing schemes. Columns (1) and (2) correspond to the baseline weighing scheme: assign weights to regions within a country proportional to population and assign equal weights to all countries. Columns (3) and (4) present results when each region has the same weight. Columns (5) and (6) presents results when regions are assigned weights proportional to population irrespective to which country they belong. In this scheme, there is no normalization that countries have equal weights. As a result, smaller countries such as Denmark, Sweden, etc. can have weights smaller than regions like California, Texas, Il de France, or Greater London. Columns (7) and (8) present results when Huber robust estimation is used to minimize adverse effects of outliers and influential observations. There is no weighing by population in this scheme.

APPENDIX D: CULTURAL VARIABLES

This appendix describes how cultural variables are constructed from the survey questions of the World Values Survey (WVS). WVS has a number of appealing features.

First, WVS has been carried out in over 100 countries since 1981. There have been five major waves of WVS approximately every 5-10 years in a typical country. Second, over time, WVS has not only increased country coverage but also extended the set of questions in the survey so that researchers can have finer measures of various cultural aspects. This is an important development as any single question may be an imperfect proxy of a given cultural dimension but using sets of questions related to this cultural dimension can greatly improve the measurement of this cultural dimension by constructing indexes (or averages) across these sets. Third, the questionnaires were standardized across countries which makes data comparable across countries. Finally, since 2000s, WVS provides geocoding of survey responses so that one can construct measures of cultural dimensions at the subnational level.

We focus on three cultural dimensions: i) trust; ii) value of work; iii) individualism. Previous research (e.g. Guiso, Sapienza and Zingales (2011), Blanchard and Philippon (2006), Doepke and Zilibotti (2008), Gorodnichenko and Roland (2010)) argued that these dimensions can be important determinants of labor supply, provision of public goods, and economic exchanges and, hence, can influence the degree of hysteresis in unemployment. For each of these dimensions, we construct an index based on a set of related question. As discussed above, using indexes is likely to reduce measurement errors. Appendix Table D1 provides the list of questions we used for each dimension.

While one may use a variety of approaches to construct indexes (e.g., simple averages, principle components, factor analysis), we use the following method as a baseline. Suppose that a cultural dimension k we have questions $X_{k,1}, X_{k,2}, \dots, X_{k,s}$. The scale of the responses may vary with questions (e.g., yes/no, 0-4 scale, 1-10 scale). To make units comparable across variables, we scale each variable by its standard deviation. Then we add up scaled variables into an index where a variable may enter with "+" or "-" signs depending on the connotation of a question. Appendix Table D1 shows the sign for each variable. Since variables are likely to be correlated, we further scale this sum by its standard deviation and obtain an index that has unit variables. More formally, the index of variable k is given by

$$I_k = \frac{\sum_{m=1}^{s} \frac{X_{k,m}}{\sigma(X_{k,m})}}{\sigma\left(\sum_{m=1}^{s} \frac{X_{k,m}}{\sigma(X_{k,m})}\right)}$$

where $\sigma(Z)$ denotes the standard deviation of variable Z. The key advantage of this approach is transparency. We find similar results when we use specific variables or alternative aggregation approaches (e.g., principle components).

Because some countries and questions entered WVS in 2000s, in our regression analyses we use indexes constructed for 2000s rather than 1980s. One may be concerned that using values from 2000s may be inappropriate since culture can respond to economic developments. For example, trust can decline if unemployment stays persistently high. While this is certainly plausible, Roland (2004) emphasizes that culture is slow moving and it can take a long time (many decades if not centuries) for culture to respond. To assess more formally the sensitivity of cultural dimensions to fluctuations in unemployment, we follow Stevenson and Wolfers (2011) and regress a cultural dimension on unemployment rate:

$$I_{ct} = \gamma_c + \beta UR_{ct} + error$$

where c and t index countries and time, UR is the unemployment rate, I is a cultural dimension. Because geocoding is available only in the recent wave of WVS, we estimate this regression at the country level. Appendix Table D2 presents results for each index as well as specific variables entering the index and available

in multiple waves. We fail to find consistent and robust evidence that survey responses or indexes of cultural dimensions are sensitive to unemployment fluctuations.

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APPENDIX TABLE D1. CONSTRUCTION OF CULTURAL INDEXES

Sign	Question	Scale
Value of Work		
-	[a003] Would you say **leisure time** is important in your life?	1 = very important 2 = rather important 3 = not very important 4 = not at all important
+	[a004] Would you say **work** is important in your life?	1 = very important 2 = rather important 3 = not very important 4 = not at all important
+	[a030] Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important? Please choose up to five! Quality: **hard work**	0 = not mentioned 1 = important
+	[c037] Please specify for each of the following statements how strongly you agree or disagree with it: **humiliating to receive money without having to work for it**	1 = strongly agree 2 = agree 3 = neither agree or disagree 4 = disagree 5 = strongly disagree
+	[c038] Please specify for each of the following statements how strongly you agree or disagree with it: **people who don´t work turn lazy**	1 = strongly agree 2 = agree 3 = neither agree or disagree 4 = disagree 5 = strongly disagree
+	[c039] Please specify for each of the following statements how strongly you agree or disagree with it: **work is a duty towards society**	1 = strongly agree 2 = agree 3 = neither agree or disagree 4 = disagree 5 = strongly disagree
+	[c041] Please specify for each of the following statements how strongly you agree or disagree with it: **work should come first even if it means less spare time**	1 = strongly agree 2 = agree 3 = neither agree or disagree 4 = disagree 5 = strongly disagree
Trust		
-	[a165] Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?	1 = most people can be trusted 2 = can´t be too careful
+	[a168a] Do you think most people would try to take advantage of you if they got a chance, or would they try to be fair?	1 = would take … 10 = try to be fair
-	[f114] Please tell me for each of the following actions whether you think it can be justified: **Claiming government benefits to which you are not entitled**	1 = never justifiable … 10 = always justifiable

(continued on the next page)

Individualism

+	[a029] Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important? Please choose up to five! Quality: **Independence**	0 = not mentioned 1 = important
+	[e035] How would you place your views on this scale? 1 means you agree completely with the statement on the left; 10 means you agree completely with the statement on the right; and if your views fall somewhere in between, you can choose any number in between: **Inequality**	1 = incomes should be made more equal … 10 = we need larger income differences as incentives
-	[e036] How would you place your views on this scale? 1 means you agree completely with the statement on the left; 10 means you agree completely with the statement on the right; and if your views fall somewhere in between, you can choose any number in between: **Ownership**	1 = private ownership of business should be increased … 10 = government ownership of business should be increased
-	[e039] How would you place your views on this scale? 1 means you agree completely with the statement on the left; 10 means you agree completely with the statement on the right; and if your views fall somewhere in between, you can choose any number in between: **Competition**	1 = competition is good … 10 = competition is harmful
-	[e037] How would you place your views on this scale? 1 means you agree completely with the statement on the left; 10 means you agree completely with the statement on the right; and if your views fall somewhere in between, you can choose any number in between: **Responsibility**	1 = people should take more responsibility to provide for themselves … 10 = the government should take more responsibility to ensure that everyone is provided for

Notes: The table describes how cultural indexes are constructed from the World Values Survey. The column "Sign" shows how a variable enters an index. Columns "Question" and "Scale" present the wording and scale of a survey question. All variables are standardized (across countries and regions; these moments are compute with population weights) before aggregated into indexes.

APPENDIX TABLE D2: SENSITIVITY OF CULTURAL VARIABLES TO UNEMPLOYMENT

	Coef. (s.e.)	Nobs
Value of Work		
how important in your life: leisure time	0.009	47
	(0.006)	
how important in your life: work	0.006	47
	(0.009)	
learn children at home: hard work	-0.011*	58
	(0.006)	
Index	-0.029	47
	(0.054)	
Trust		
people can be trusted/can't be too careful	0.002	58
	(0.004)	
do you justify: claiming state benefits	-0.040	58
	(0.028)	
Index	0.022	58
	(0.029)	
Individualism		
private vs. government ownership business	-0.006	42
	(0.040)	
individual vs. state responsibility for providing	0.007	47
	(0.037)	
equalize incomes vs. incentives for individual effort	-0.131**	41
	(0.064)	
Index	-0.097	40
	(0.170)	

Notes: the table reports estimates of β in $Culture_{ct} = \gamma_c + \beta UR_{ct} + error$ where c and t index countries and time, UR is the unemployment rate, $Culture$ is a cultural variable. Cultural variables are aggregated to the country level for any given year.