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The Effects of Immigration on Social Expenditure in Host Countries[♣]

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This paper examines the relationship between immigration and social welfare expenditure in the host countries using OECD panel data. Particular focus is placed on the age structure and educational level of immigrants. Empirical results show that while unskilled immigrants including asylum seekers are not necessarily a burden to the host countries, medium and highly skilled immigrants contribute to a decrease in social expenditure. In particular, highly skilled immigrants mitigate the increase in social expenditure related to welfare for the elderly driven by the aging of immigrants.

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Introduction

The attitude of nationals in developed countries toward immigration has changed dramatically around the world. Besides Brexit, the success of US President Donald Trump also indicates a surge in xenophobia. One reason for the change in public sentiment is the increase in the number of immigrants, possibly leading to a threat to host economies, societies, and the national budget.

Many researchers have examined the effects of immigration on the national budget, especially social welfare expenditure. Recent researches have shown that the effect of immigrants on welfare differs depending on their skills. However, as explained later, most of these researches use a theoretical model, and there are few empirical studies.

This paper examines the effects of immigrants on social welfare expenditure in the host countries using the panel data of OECD countries. In particular, we focus on the age structure and three subdomains on the educational level of immigrants. Social expenditure data is divided into two types depending on the educational level. We then investigate the increase in social expenditure driven by the aging of immigrants as well as the difference in the structure of the people who migrate to host countries. We compared OLS and IV with the pooled model and fixed effect model, adding to year dummy variables.

Our findings are summarized as follows. Firstly, the effects of the unskilled are not strongly observed because those disappear when we consider macroeconomic effects and that of humanitarian immigration. Secondly, medium skilled immigrants can contribute to reducing the social expenditure. Finally, considering the possible influence of the female labor force on immigrant workers, we find that highly skilled immigrants are beneficial to the welfare system.

This paper is organized as follows. Section 1 examines the transition of immigration history and recent immigration policy. Here we review the historical facts of migration. Although they vary greatly from country to country, they are helpful for grasping current immigration movements. We focus on recent entrance regulations that align with our purpose. Section 2 examines the effect of immigration on social expenditure in OECD countries. Section 3 presents the conclusions of this paper. An explanation of abbreviated terms and detailed data source, coefficient matrix, etc. is provided in the Appendix.

1. Survey of Historical Immigration and Entrance Regulation

Receiving policies differ depending on the different skill levels and purposes of immigrants. In other words, every host country treats highly skilled and unskilled immigrants separately. This structure started to develop after the Second World War and changed through the 70s. Rather than discuss the effectiveness of each policy, this chapter organizes the transition of receiving policies

in main OECD countries. This is followed by a discussion on the recent entrance regulations for both skilled and unskilled immigrants.

1.1 Immigration after the Second World War

Immigration has been promoted and restricted according to the economic and political situation in host countries. Policies regulating immigration have also reacted to such factors. This chapter provides an overview of the history of immigration in major OECD countries. Historically speaking, the origin of modern immigration is the Second World War. Just after the war, the developed countries, especially western Europe and the US, suffered from a serious shortage of labor because of their rapid economic growth. Their governments promoted recruitment of temporary workers from countries with which they had strong relationships, such as ex-colonial or neighboring countries and those with bilateral agreements. After the economic depression induced by the oil crisis in 1973, however, the importing countries experienced a change in the industrial and demographic structure and started to place more importance on the economy in the long run, while some short-term systems remained.

In Europe, the western countries welcomed temporary workers to compensate for the labor force lost in the war and to accelerate the economic restoration after the war. In the UK, West Germany, the Netherlands, and France, the governments and the authorities recruited and distributed temporary workers and determined the working conditions (Castles 1986, 761-762). Belgium and the Netherlands entered into bilateral agreements with South European countries such as Spain, Portugal, and Italy (Messey and Liang 1989, 202). In Switzerland, employers gathered workers but their entrance and residency were organized by the government (Castles 1986, 766-768). The oil crisis forced the countries to reduce or prohibit the inflow from outside of the EU and EEA (Castles 1986, 773), meaning countries in the EU continued to struggle with free movement under the Schengen treaty. Most of the unskilled workers entering the countries after 1973 were third-world illegal immigrants, their families, and asylum seekers (Castles 2006, 773-774).

After the economic stagnation in the 70s[1], the policies of these countries became more pragmatic. The UK reduced the number of work permits issued under the Thatcher administration (Hansen 2014, 201-203). The subsequent labor government expanded the permits in response to labor demand. At the same time, it changed some policies on the entrance of skilled immigrants with a points system (explained later) and of the unskilled through opening its doors to the new member states in the EU after 2000. Germany tried to legally accept a certain number of

[1] In Belgium, policies are different in the two regions with different languages and cultures, so it is difficult to discuss the immigration problem as a matter of one country (Triandafyllidou and Gropas 2016, 29-30).

immigrants determined by the authorities, but after the fall of the Berlin Wall in 1989, a large number of unskilled workers or illegal immigrants managed to enter the country. Then, the government imposed severe restrictions on the constitutional right of immigrants, which led to the recent pragmatic policy (Triandafyllidou and Gropas 2016, 147-149). France experienced a number of policy changes on the entrance and assimilation of foreigners born from 1980 to 2012 (Triandafyllidou and Gropas 2016,137). Here although the new government should follow a different policy, the actual policy remains to be the same. In this sense, this policy is a conservative but pragmatic. Switzerland reduced the immigration level immediately after the crisis, but it began to allow seasonal workers to change their status to that of permanent residents because the economy rallied relatively quickly. After the bilateral agreement with the EU in 2002, the country gradually placed greater restrictions on Third Country Nationals (TCNs) (D' Amato 2014, 311-315).

Even in the same region, northern countries had a different history from those in the west. Nordic countries[2] including Norway, Sweden, and Denmark accepted labor immigration very generously from other regions, but they officially shut out migrants from the 70s up until they joined the EU. However, the inflow continued with another cohort such as asylum seekers and their families although some of them did have an economic purpose (Brochmann 2014, 281-282).

After the early 70s, the position of the three Scandinavian countries became diversified as Denmark became the strictest, Norway remained in the middle, and Sweden became the most generous. Denmark, which accepted foreign residents from Islamic countries, questioned whether such immigrants could assimilate in the welfare state. In the 90s, it restricted family integration with selective systems for those who could be beneficial (Triandafyllidou and Gropas 2016, 97-99), and this lasted with further constraints until 2001 (Brochmann 2014, 292). The government admitted that there were sufficient nationals from the new member states in 2004 to meet the labor supply needs. Norway can be placed in the middle of the Nordic countries in terms of immigration generosity. It joined EEA in 92 and signed the Schengen Agreement in 2001. Although the country is not a member of the EU, it faced a huge inflow from eastern Europe, and therefore, the government required TCNs to clarify they were financially stable (Brochmann 2014, 292). Sweden tried to stop the inflow until it joined the EU in 1995. On the other hand, as the welfare policy was still generous, public opinion was such that the policy was overly generous. After that the government adopted the same requirements as those of Norway, but it introduced a more liberal immigration policy for workers (Brochmann, 289-292).

[2] Finland is located just between Europe and Russia, and has strongly restricted migration historically. The level of foreign population is quite low (see Table A1), so it is an exceptional country in the Nordic region. Thus, it has been omitted.

Countries in South Europe such as Italy and Spain did not develop restrictions on the numbers of immigrants received. In Italy, which had received numerous illegal migrants, the first comprehensive immigration system was passed in 1990, which set a quota on the number of coming in (Perlmutter 2014, 341). However, their policy changed from a generous to restrictive one because the government coalition was composed of several parties. After 1995, the government at that time introduced an efficient employment-based quota system along with the migrants from the eastern European countries (Perlmutter 2014, 350).

Spain used to be an exporting country of immigrants until the 1st oil crisis under the national agreements with the western countries (Hanzan 2014, 375-376). The government encouraged or prohibited the outflow of migrants in accordance with the economic conditions. Because of the economic depression of the receiving countries in the 70s and joining the EC in the 80s, Spain became a net immigration country, with migration mainly from north Africa and eastern Europe (Hanzan 2014, 377). Both countries held a positive attitude towards receiving immigrants until 2008.

While control of foreign workers in EU countries was lost since most of them failed to return home or family integration was prohibited, transpacific countries such as the US, Canada, and Australia experienced a different immigration flow. The US had a bilateral program with many countries; one of the biggest being the Bracero Accord from 1942, which recruited Mexican workers for industries with a labor shortage (Messey and Liang 1989, 203). The original model of current programs for unskilled workers was also formulated in the 1950s (Padilla and Cachanosky, 146). After the 70s, however, the government introduced a sponsor system and stopped the nation-level restrictions even though the inflow from Mexico continued. In the 80s, it started to regulate illegal migrants, and then in the 90s, the US began to attract people who would not impinge on the domestic market or labor force to work in high-tech industries with the H1-B visa, (Chaloff and Lemaitte 2009, 20).

Canada and Australia in the 50s and 60s concentrated mostly on Europe as a source of labor force to grow their economy, with a racially-motivated background. Through the crisis, however, they changed the target to skilled immigrants using a points-based system, which is explained in a later chapter (Brochmann 2014, 281-282). In 1973, the Canadian government introduced the Temporary Foreign Worker Program, and the number of permitted workers gradually increased. In 2008, Canadian Experience Class linking was created to promote permanent residency for temporary workers. Between these periods, the weight of some factors in the points-based system changed, reflecting its economic situation (Reitz 2014, 97). Australia imitated the points system of Canada as a main pillar of the immigration system and supplied the short-term labor force with working holiday visas and temporary migrants with long stay visas (Castle et al. 2014, 132).

1.2. Restriction on and Selection of Immigrants

At first, unskilled immigrants were recruited as temporary workers to meet shortages in the domestic labor market. Later, they were banned from entering the countries because of there being fewer jobs due to the economic crisis. Nowadays, however, many countries are gradually starting to regulate these immigrants again. EU countries partially use a recruitment system, but the US restricts immigration with relatively strict systems.

After the economic depression in the 70s, the host countries focused more on the domestic market. Temporary workers are demanded often through more flexible programs, which are drived by employers (Padilla and Cachanosky, 145). They can be classified into three types[3]: the labor market test, labor shortage list, and quota system (Padilla and Cachanosky, 136-137).

Firstly, the labor market test is a system for protecting domestic labor. Employers have to advertise any job vacancy to nationals for a certain period, sometimes through a public employment security office, and ensure the position cannot be filled by native workers, or EU citizens in the case of the EU. Secondly, combined with the labor market test, the shortage list is often created by public employment security offices, employers, and trade unions in each region. Finally, the quota system caps the number of visas issued to immigrants. Examples of the recent policies in main OECD countries are shown in Table1-1.

The period and work field are quite limited. Officially, immigrants are supposed to return to their country of origin within one year while Canada and the US allow a longer period. This indicates that the EU considers that the permanent residents of western countries provide a sufficient workforce. As for the work field, many countries recruit unskilled workers for the service industry and agriculture.

[3] The transitional measures by the western member states against the eastern countries in the EU are being removed. They will then face the need for new programs considering the inflow of EUA8 nationals. Therefore, the countries are likely to renew the programs against TCNs in the near future.

Table 1-1.Temporary work permit programmes for low-skilled w

	Programme	Maximum length of stay allowed	Guarantees required	Sectors involved	Number of participants	Limits
CANADA	SAWP	< 8 months	Labour marker test; employer must pay transportation and housing (can deduct from salary)	Agriculture	18,000 (2006)	None
CANADA	Temporary Foreign Worker Programme C (intermidiate and clerical)	< 2 years	Labour market test; cover all recruitment costs; help find suitable, affordable accommodation; pay full transportation costs from home country; provide medical coverage until the worker is eligible for provincial health insuarance coverage	All sectors	34,000 (2006)	None
CANADA	Temporary Foreign Worker Programme D (elemental and labourers)	< 2 years	Labour market test; cover all recruitment costs; help find suitable, affordable accommodation; pay full transportation costs from home country; provide medical coverage until the worker is eligible for provincial health insuarance coverage	All sectors	3,500 (2006)	None
FRANCE	Seasonal Agricultural	< 6 months/annually for 3 years	Labour market test or shortage list; employers must guarantee housing	Agriculture	17,000 (2006)	None
GERMANY	Bilateral Agreements	< 8 months	Employers must provide housing (can deduct from salary)	Agriculture, other temporary	290,000 (2006)	None

ITALY	Seasonal Work	< 9 months	Demonstrate existence of (but not necessarily provide) housing; must pay repatriation costs for overstayers	Agriculture, tourism	64,540 (2006) (requests)	80,000 (2008)
NEW ZEALAND	Recognised Seasonal Employer	< 7 months	Labour market test; employer must demonstrate (but not necessarily provide) housing and pay half transportation costs; employer must pay repatriation costs for overstayers	Agriculture	5,000 (2007)	Quota of 5,000 (2007)
SPAIN	Contigent	< 9 months	Labour market test or shortage list	All temporary sectors	78,000 (2006)	None
UNITED KINGDOM	Seasonal Agricultural Worker Scheme (SAWS)	< 6 months	Employers must guarantee housing but can deduct costs	Agriculture	16,000 (2005)	Limited to Romanian/ Bulgarian citizens from 01/01/08
UNITED KINGDOM	Sector Based Scheme	< 12 months	Employers must guarantee housing but can deduct costs	Food processing	3,500 (2007)	3,500 (2007); to be phased out
UNITED STATES	H-2A	< 10 months	Employer must pass labour certification test, pay at least enough to counter adverse wage effects, provide housing and cover one-way transportation costs	Agriculture	50,000 (2006)	None
UNITED STATES	H-2B	< 10 months, renewable up to 3 years	Employer must pass labour certification test	Non-agriculture, especially landscaping, cleaning, hospitality, construction	200,000 (2006)	Capped at 66,000 entries annually

Source: OECD (2008)

Unlike the development of policies for the unskilled, policies targeting skilled immigrants have been developed in recent years. As the economic and demographic structure changed in the world, industrialized countries could not suppress both demand-pull and supply-push factors. The former is the "shortage of manpower and human capital and demographic decline"; the latter, the "rapid population growth combined with low rates of economic growth and high unemployment, especially among the young" (Hollifield et al. 2014, 4). Thus, the receiving country must select immigrants that will be beneficial to it. The position of skilled workers differs from country to country based on their historical backgrounds. Australia and Canada see skilled workers as a key factor in their economic growth, but EU countries and the US consider the protection of domestic workers first, with a combination of skilled immigrants.

Approaches by the countries can be divided into two types: systems led by demand and systems led by supply (Padilla and Cachanosky 2016, 134-135). The demand-led system is mentioned above. The supply-lead system, which is often used in OECD countries, is a points-based system, (Powel, 140-141), which originated in Canada in 1967 (Reitz 2014, 92). The system evaluates the language skill, educational level, age, experience in the country, number of family members in the country of origin, request by the employer, and the suitability for the job with a labor shortage (Chaloff and Lemaitre, 21-23). Detailed differences among the countries are shown in Table 1-2.

Among many EU member states, a characteristic system, called a Blue Card[4], is adopted to invite TCNs with high skills (Powel, 138-139). It permits them to reside and work inside the EU after a continuous stay of 5-11 years, and also to override the policies of individual states. To obtain the card, applicants must pass rigorous criteria concerning the points of occupation, residence, and welfare independence.

Chaloff and Lemaitre compare immigration policies for the highly skilled in 10 OECD countries. They show the advantages and disadvantages of labor-led and supply-led policies. Although the points system attracts promising immigrants without offering employment opportunities, it seems that, for social and demographic reasons, immigrants have more difficulty finding jobs that match their skills (Chaloff and Lemaitre 2009, 33). The demand-driven system is effective in linking immigrants with employment. However, if employers recruit too many immigrants, and if they become unemployed for any reason, it can be disadvantageous to the economy (Chaloff and Lemaitre 2009, 32). Recently these two systems have been combined to attract highly skilled immigrants (Chaloff and Lemaitre 2009, 42). On the other hand, policies for the unskilled are positioned as a complement for temporary labor shortages.

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[4] The states ratifying the Blue Card are Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechoslovakia, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Latvia, Lithuania, Luxemburg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, and Sweden (Padia and Cachanosky 2016,137-138).

Table 1-2. Popicies for High-Skilled immigrants in the OECD

	Permanent migration programmes relevant for highly skilled workers PTS: Point system	Main temporary migration programmes relevant for highly skilled workers #Y : maximum duration R : renewable LMT : labour market test	Quota	Characteristics of the Labour Market Test	Shortage occupation list	Foreign students can change status after the completion of their studies
AUSTRALIA	- **General Skilled Migration** Programme (GSM) - PTS - **Employer Nomination** Scheme (EN) - PTS - **Regional Sponsored Migration** Scheme (RSM) - PTS	- **Temporary business long stay** (457) *4YR*	**Yes.** Cap of 108 500 for 2007-2008. Queue spillover.	Shortage list occupations only. No LMT, although salary is verified.	SOL, Employer Nomination (ENSOL), MODL (bonus points for PR)	Skill Independent (880), Australian Sponsord (881) & Designated Area Overseas Student (882)
AUSTARIA	- **Permanent residence permit and unrestricted work permit** (generally after 5 years of residence and fulfilment of the integration agreement) EU-8 nationals after 1 year and third country nationals with a key worker permit after 18 months can get an unlimited residence permit.	-**Key workers permits** -**Restricted work permit** 1YR LMT -**Work permit** 2YR LMT (52 weeks in employment over the last 14 months)	**Yes**	No registered unemployed person is available and the employer respects applicable wages and labour law.	**No**	**Possible**, but no specific programme.
BELGIUM	- **A Permit** (generally after 4 years of continuous residence with a B permit over the last 10 years)	-**B Permit** 1YR LMT and limited to bilateral agreements (wage ≥ €33k no LMT and no condition on nationality. UE8 nationals with a job offer can get a Permit B without LMT) -**"Professional Card"** for Independent practice delivered by SPF *Économie* , 5 YR	**No**	**B permit** issued if a worker cannot be found or trained "within a reasonable delay". Approval is within 30 days of application to the responsible labour office.	**Yes**	**Possible**, but no specific programme.
CANADA	-**Skilled Worker Class** (R 75) - PTS -**Provincial Nominee Class** (R 87)	-**Temporary Foreign Worker** (R200) limited to the duration of employment, LMT except if included in Regional Lists of Occupations under Pressure -**TN visa** 1YR (NAFTA)	**No** (target of 129 000 to 142 000 in 2007 for Skilled Worker, Quebec Skilled Worker and Provincial Nominee)	**Temporary Foreign Worker**: Labour market opinion, with demonstration of attempts to fill position (advertisements, etc. and public employment service), verification of prevailing wage and conditions. The LMO also considers whether "employment of the foreign worker will directly create new jobs or retain jobs for Canadians". Trade union approval will accelerate the process. No LMO necessary for "Occupations under pressure". **Permanent Migration**: Arranged Employment Opinion for Skilled Workers provides additional points under the point system.	Regional Lists of **Occupations under Pressure** (only for Temporary Foreign Workers)	**Possible**. The **Post-Graduation Work Permit Program** grants up to 3YR permit to work. This is important to acquire "Canadian Experience" for permanent residence.
CZECH REPUBLIC	-**Permanent Residence** (after 5 years of continuous residence with a Long term Residence Permit; this is shortened to 2.5 YR for qualified workers and 1.5 YR for highly qualified – tertiary educated – workers).	-**Long-term Residence Permit** for the purpose of employment >1YR LMT -**Work Permit** 1YR LMT -**Project of Active Selection of Qualified Foreign Labour** for young qualified foreigners (quicker access to a permanent resident status).	**No**	Employer must be authorized by Public Employment Service, and job is checked against registered unemployed for 30 days.	**No**	**Possible**, accelerated access to Permanent Residence (2.5 or 1.5 YR depending on degree)
DENMARK	-**Permanent Residence permit** (after 7 years)	-**Work Permit** 1YR LMT -**Job Card Scheme** 3YR for occupations in the "positive list" or a job offer ≥ DKK 463k -**Green Card**: 6-month job-search permit issued on the basis of points for education, language, shortage list, experience, prior wages, experience, age. Must be converted to Job Card permit before expiry.	**No**	Danish Immigration Service consults the relevant trade union, except for shortage list occupations.	**Positive list** of occupations. Generally masters-level, in health, science, management, architecture/engineering, law, etc.	**Possible**. Automatic 6-month extension after graduation to seek work under Green Card terms. Study counts for permanent residence requirement.

FINLAND	- **Permanent permit P** (after 4 years with a A-permit)	- **A-Permit** 3YR LMT - **B-Permit** 1YR LMT	**No**	Employers or job applicants must apply for authorisation from the Public Employment Service, which lists the job for 2-4 weeks, except for occupations on the regional shortage list. Local labour market authorities also check the skill level and that the job offer satisfies collective agreements.	Regional list for each of 15 regions.	Foreign students who earn a degree in Finland can apply for a work permit for a maximum of six months.
FRANCE	- **Residence permit** (after 3 years for people with a permanent worker permit)	- **Permanent worker permit** 1YR LMT : a job contract for unlimited duration is needed (Carte de Séjour Temporaire salarié) - **Temporary work permit** <1YR LMT (Autorisation Provisoire de Travail) - Card "**Compétences et Talents**" 3YR	**No**	Employer must publish position with the Public Employment Service, and submit application to the Departmental Labour, Employment and Vocational Training service for a discretionary review of professional qualifications, contract wage and conditions, the technological and commercial added value of the foreign worker, and the employer's guarantee of available housing.	Since 2006 there is a shortage occupation list for nationals of new EU member states (LMT exemption); since 2007 a separate, shorter, list for 3rd country nationals (access only for these occupations).	Student with a French master degree, with the perspective to return in their origin country, can ask for 6 months permit to seek work in their field, and receive a permit exempt from the LMT. Other foreign students can change status under general rules.
GERMANY	- **Settlement permit** (generally after 5 years of residence or immediately for highly qualified – researchers, university professors, those with a job offer over EUR 65.6K annually)	- **Temporarily restricted residence permit** for the purpose of employment (1YR LMT) for people with a post secondary qualifying education. It is subject to a local LMT and to Federal Employment Agency agreement. "Tolerated" foreigners with qualifications and	**No**	Local labour market test, certain categories and shortage areas provide exemption from vacancy listing. Graduates of German secondary schools abroad are exempt from LMT if they hold tertiary degrees.	**Possible**; used only for engineers from new EU member states, although all tertiary educated EU citizens will have free access from 1/1/2009. The "Qualified Labour Shortage Monitoring" will also be expanded.	Students are entitled to remain in Germany for up to one year after successfully completing their studies for the purpose of seeking employment. They are exempt from the LMT.
GREECE	- **Residence permit –employment** (1YR but may be indefinite after 10 years)	- **A-permit** 1YR LMT	**No**	Submission to the public employment service (OAED) for approval	The Law 2910/01 introduced the possibility to respond to local needs in labour force by speciality but in practice this has not been implemented	**Possible**, but no specific programme
IRELAND	- Long term residency permit (validity 5 years after 5 years of residence and unlimited duration after 10 years)	- Green card permit 2YR (€30k< salary < € 60k and shortage occupation list or all occupation with salary > €60k) - **Work permit** 1YR LMT (salary <€30k, occupation should not be included in the ineligible occupation list)	**No**	Advertisements in the national and/or local press, showing that the positions could not be filled from within the EEA	Shortage occupation list Ineligible occupation list	Students who completed a primary, master or doctorate degree may be permitted to remain in Ireland for 6 months to seek employment.
ITALY	- **Residence permit** (possible after 5 years of legal stay	- Work permit 1YR LMT (fix term contract) - **Work permit** 2YR LMT (open end contract)	**Yes** (170 000 in 2007) with some exceptions (nurses, university professors, researchers, artists, etc.)	Listing with public employment service. Automatic approval even without response after 21-day listing.	**No**, although quota contains separate subcategory for highskilled and executives (1000 in 2007).	**Yes**, annual quota sets a maximum number of conversions of study permit to work permits (3000 in 2007).
LUXEMBOURG	- **Permit type C** (after 5 years of residence)	- **Permit type A** 1YR LMT (cannot change employer or occupation) - **Permit type B** 4YR LMT (cannot change occupation)	**No**	Job must be submitted to the public employment service (ADEM). If no candidates are registered, the application may be approved.	**No**	**Possible**, but no specific programme

NETHERLANDS	-**Permanent residence permit** (after 5 years of residence)	-**Labour migrant work permit** 3Y LMT non renewable. In general people are required to take a civil immigration test in their home country (Applicants must be between the ages of 18-45) -**Highly skilled migrant** 5Y (wage ≥ €33.3k for people under 30 or wage	**No**	Centre for Work and Income must approve employer request, which must meet minimum wage to support entire accompanying family.	**No**, but in some cases the labour market test can be lifted for specific occupations or sectors.	**Yes**, international students after graduating can stay for up to 3 months to seek a job.
NEW ZEALAND	-**Skilled migrant Category** (SMC) - PTS	**Work to Residence policy** : -Accredited employer (talent programme) -Long Term Skill Shortage List **Work permits** : LMT **Working holidays** 1Y (work period ≤6 months)	**No**	For work permits: The employer must make "a genuine attempt" to recruit suitable resident workers. The application is rejected if suitable workers are available in New Zealand, but not "prepared to do the work on the terms and conditions proposed by the employer", or if the employer could "readily train" residents to do the work. Exemption from LMT is the occupation is listed in the ISSL.	Immediate Skill Shortage Lists (ISSL) Long Term Skill Shortage List (LTSL)	**Yes**, people who have completed in New Zealand a 3 year course or a qualification that would qualify under Skilled Migration Category; may be granted a work permit for a maximum of 6 months to enable them to look for work
NORWAY	-**Permanent residence permit** (after 3 years with temporary permit)	-**Skilled worker / specialist** (SWS) 1YR -**Job seeker visa** (generally 3 months)	**Yes** for skilled worker specialists, (5000 in 2007) but if the quota is full, it is still possible to grant a permit following LMT	Employers are encouraged to request a labour market assessment (LMA) from the Public Employment Service (NAV) and enclose it with the application. Otherwise, the police contact NAV for an LMA. There is a quota for skilled workers and specialists; beyond this quota, prior LMA is required. Work permits are not granted if the post can be filled by domestic labour, and the position must require specific skills possessed by the candidate.	**No**	**Possible**, foreign students with a job offer after graduation may be granted a work permit for up to 1 year if they did not benefit from a grant from their origin country or a cooperation programme.
PORTUGAL	-**Permanent residence permit** (after 5 or 8 years of residence depending whether the person is from PALOPS country –country with Portuguese as official language- or not)	-**Work permit type II** 1YR (to carry out a scientific research activity or an activity that requires highly qualified technical skills - including doctors and nurses) -**Work permit type IV** 1YR LMT (IEFP list)	**Yes**, with some exceptions	30-day job listing requirement with the Public Employment Service. Possibility of an exclusion list where no authorisation is granted, although this has not been used.	**No**	**Possible**, but no specific programme
SPAIN	-**Permanent residence permit** (after 5 years of legal r	-**Work permit B** type 1YR LMT (limited to specific activities and area; can be renewed for 2 years) -**Work permit C** type 3Y LMT (after B type permits; no restriction) -**Permits D and E** for self employed	**Yes**, only for anonymous hiring (contingente)	"Negative certification" is required for General Regime workers. Job must be listed with public employment service for 15 days, and employers must interview candidates sent by the Public Employment Service, although they are allowed to reject them. However, no LMT is applied for shortage list occupations.	Regional shortage list (Catalogo de occupations de dificil cobertura)	**Yes**, foreign students can have a residence and a work permit after graduation if they have been in Spain for at least 3 years and did not benefit from a grant from their origin country or a cooperation programme.

SWEDEN	-**Permanent Residence Permit** (PUT)	-**Work Permit** 5Y LMT	**No**	The Public Employment Service authorises a work permit only if no Swedish, EU, or EEA workers are available or who can be trained "within a reasonable time" to fill the vacancy.	**No**	**No**, as a general rule, a foreign student from outside the EU/EEA/Switzerland must leave after completing his/her studies.
SWITZERLAND	- **Settlement permit** can be delivered after 5 years of residence for EFTA, USA and Canadian nationals or 10 years for other countries.	-**Residence permit** 1YR LMT (5YR for EEA nationals) -**Short term permit** 1YR LMT once -**Trainee exchange schemes** with about 30 countries 18 months maximum	**Yes**, separate quotas for longer and short term. 7000 (<5Y) and 4000 (<1Y) (2008). EEA exemption.	Priority is given to resident workers. 21 day required listing with Cantonal Public Employment Service, as well as EURES and other channels. Federal Office for Migration must also approve the request.	**No**	**Possible**, but no specific programme, although there is a quota exemption.
UNITED KINGDOM	-**Permanent residence** –indefinite leave to remain (after 5 years of legal residence with a work permit) - PTS	-**Tier 1 (General) High Skilled Worker** 3YR (no job offer needed, points test covering age, qualification and field, prior wage, UK experience, sufficient funds and language requirement) -**Tier 2 Skilled Worker** 3YR Requires job offer, LMT (no LMT if occupation included the shortage occupation list), and points test covering qualifications, expected wages, language, sufficient funds.	**No**	The "Resident Labour Market Test" for Tier 2 requires employers to advertise for an EEA worker, submitting proof of advertisement within the past 6 months, information on applicants and selection process, and justification for not hiring applicants. The Shortage Occupation List provides an exemption from this test for specific occupations.	Skill shortage occupation list	Non-EEA student who has obtained a degree level qualification may apply to switch into the relevant Tier without leaving the UK. The **International Graduates Scheme** allows graduates to stay up to 12 months for work, after which they must switch into a relevant Tier.
UNITED STATES	-**EB1** for those of "extraordinary ability" – no employer required -**Employment based immigrant visa EB1, EB2 or EB3** -**Green card** (H1B visa holders can ask for a green card after 6 years)	-**H1B** visa 2YR maximum 6Y (specialty professional workers – bachelor degree or more : includes doctors and registered nurses). LMT in some cases. H-1B1 for nationals of Chile and Singapore (special quota) -**TN visa** 1YR (NAFTA), NAFTA occupation list includes most health professionals but physicians only for research and teaching activities -**J1** Visa 3YR maximum 6Y (exchange visitor skill) generally must return for 2 years to its former country of permanent residence (except if eligible to J1 waiver) -**L1** (intracompany transfer) 5-7Y maximum.	**Yes** for H1B (65 000). Permanent category quotas are EB1 (40 000), EB2 (40 000) and EB3 (40 000), although "recapture" occurs. No quota for TN, L1 or J1 visa.	For EB2 and EB3 – "permanent labour certification". A shortage list ("Schedule A") provides an exemption from certification. For H1B – Internal workplace listing only: 10 day posting at the workplace, or electronic distribution to employees, as well as to collective bargaining representative if relevant. Labour Condition Application is only for verification of prevailing wage. For "H1B-dependent employers" there is a LMT consisting in attestation of "non-displacement" of a U.S. worker within 3 months before and after request; "good faith" attempts to recruit U.S. workers and an offer of the job to a U.S. applicant who was equally or better qualified than an H-1B worker.	**Yes** "Schedule A" for permanent residence (EB2 and EB3). H-1B is available only for specified specialty professions.	**Yes**, F1 visas allow graduates to stay for up to 12 months to pursue professional training (6 months for M1 visa holders) Within the H1B programme there is special quota (20000) reserved for foreign students with a Master or PhD from US academic institutions

Source: Chaloff and Lemaitre (2009)

2. Empirical Analysis of Social Expenditure and Immigration

Are immigrants a net beneficiary or a net contributor to the welfare state? Thanks to social security formed by each welfare state, people have been able to hedge potential risks and lead a life with ease. Recently, however, this has not been the case. As aging proceeds in developed countries, that system is losing its sustainability. According to the economic literature, immigrants are one solution to this problem. Historically, they were considered just a temporary workforce to complement the labor shortage in developed countries, and some countries regarded them as an economic burden after the oil crisis in the 70s. In the late 90s, however, this outlook gradually changed, and the contribution of immigrants to these countries has been discussed in a variety of literature.

2.1. Literature review

Razin and Sadka (1999) investigated the effect of immigration, especially unskilled workers, on the pension system in the host countries. They used the two period overlapping model accepting capital inflow, where immigrants also receive a pension after retirement, and stated that unskilled immigrants contribute to the total welfare of natives even if they are net beneficiaries of the pension system. In many studies exploiting this result, Keminits (2003) considered the effect on the unemployment compensation system with the pension system. They showed that unskilled immigrants increase the unemployment rate of natives and are beneficial to the highly skilled and pensioners. The latter is only under a low level of inflow because an overly large inflow causes lower income per capita and higher unemployment. Lacomba and Lagos (2010) claim that immigration may be politically welcomed by the elderly, who gain a higher pension from immigrants, but opposed by the young, who will have to share the pension with them.

From broader viewpoints, Lee and Miller (2000) examined the net present value of the fiscal effect of immigrants. The effect differs depending on their age and skill, and types of governments. Not only the young highly skilled but also the unskilled with a high fertility rate are beneficial. They conclude that policies should not take seriously the number of immigrants because the influence itself is quite small. Also, Storesletten (2000) calibrated the fiscal contribution of immigrants and concluded that the U.S will obtain the highest benefit from highly skilled foreigners aged between 40 and 44. Unskilled foreigners will always be a burden on the fiscal state if there is no fiscal policy change.

However, there are few empirical researches on this topic. Borjas (1994) started to estimate the static effect of immigrants in the US, or the receiving rate of welfare benefits from 1970 to 90. He concluded that the ratio is increasing year by year and they are clearly receiving more benefits than natives, although the amount itself is small. For the EU, Boeri (2010) found that many unskilled immigrants are net beneficiaries of non-contributory benefits. With OECD

countries, Soroka, S. et al. (2006, 2016) tried to capture the effect of immigrants on the growth of social expenditure, controlling for political movement against immigration. The results are not robust for Soroka (2006), as it neglects serial correlation (Soroka, S. et al. 2016, 8), or significance (Soroka, S. et al. 2016, 9).

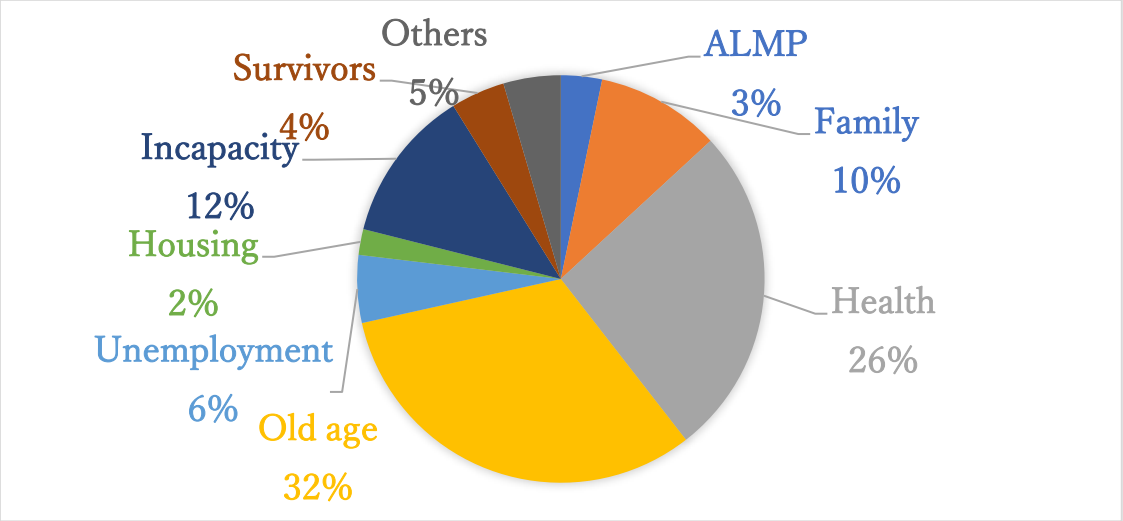
In this paper, the model of Soroka, S. et al. (2016) is expanded with consideration of the literature of the theoretical researches described above. Immigrants are divided into three educational groups and the effects of each are analyzed regarding four types of social expenditure, total, the elderly, health, and unemployment, controlling for economic growth. As a result, medium educated immigrants are found to contribute to the social expenditure.

The structure of this paper is as follows. The Section 2 defines each term used in our estimation model based on their datasets. Section 3 discusses the model specification. Section 4 shows the results of our estimation, and finally, Section 5 concludes and refers to further research.

2.2. Data

For social expenditure data, we adopted the Social Expenditure Database (SOCX) of the Organization of Economic Co-operation Development (OECD). This data consists of nine types of expenditure: elderly, health, unemployment, family, active labor market policy (ALMP), unemployment, housing, survivors, disability, and others. We selected three categories for our regression: elderly, health and unemployment. The elderly category including pension benefit is strongly related to individual age. The benefits and services for health such as medical services would be gradually required as aging proceeds. Unemployment benefit is irrelevant to age. With the three kinds of expenditure with different aspects, a different effect of immigrants can be seen. In addition, the first two occupy about 70% of the averaged total social expenditure by the number of sample countries (see Fig. 1), and thus, immigrants' effect on these kinds of expenditure relates to the entire welfare system in the receiving countries. On the other hand, we selected the other two, plus health expenditure, to investigate whether immigrants can be dependent on natives. These systems are basically sustained by tax, or part of the nation's income, while pension is generally contributory. Thus, if immigrants are relying on these benefits or services, they are more likely to be stigmatized.

Figure 2-1. The share of subdomains in SOCX of all sample countries



Source: OECD. Stat

Among the various databases that tally the number of immigrants, Brücker et al. (2013) have a crucial advantage, with 20 countries and five interval periods from 1980 to 2010. They consider immigrant educational levels. Immigrants are divided into low educated, medium educated, and highly educated, and a more detailed definition is provided in Table.A2 in the Appendix. Soroka et al. (2006, 2016) utilized UN data, comparing OECD data. Both have a longer period and a larger number of countries, but considering the importance of educational difference, which would capture their different economic impacts in the receiving country, the dataset of Brücker et al. (2013) provides more significant implications.

However, this dataset has the same problem as others. The definition of immigrants is *foreign-born individuals aged 25 years and older* (Brücker et al. 2013)[5], implying that the cost and benefit of foreign children such as educational fees, future tax paid and social benefits used by them cannot be considered. The impact of foreign born children with foreign born parents will be measured when they reach 25 years old, but immigrant children born in receiving countries are seen as natives in many cases. Whether both or either of them should be considered are very difficult questions. Hence, the results might overestimate or underestimate the actual impact of immigrants. In fact, the accumulation of immigration data today is insufficient. This paper's

[5] Some misclassification about female foreigners in Sweden was identified between 1980 and 1985. Female adults who were born in and are residing in Sweden are counted as foreigners, but they are certainly Swedish. We looked at another database compiled by AIB and did not find any change in the definition of immigrants in Sweden in these periods. In our regression, therefore, the numbers for immigrants are treated as 0.

contribution, therefore, is to obtain empirical analysis along with the theoretical research considering immigrant skills.

2.3. Analysis

The model in this paper is an extension of that of Soroka et al. (2016), which empirically analyzes the impact of immigration on social expenditure using political rather than economic factors. We made additions to control some variables for economic growth and were more specific regarding the immigrant educational level, as shown in the model below. Since the number of immigrants is counted every 5 years through the census, the other variables also have a 5-year interval. The dependent variable is the ratio of social expenditure to GDP. The subdomains are public spending for the elderly and health. The explanatory variable is the n of immigrants per total population in receiving countries. The immigrants are classified into four types regarding educational level: total, low educated, medium educated, and highly educated.

In the process of model specification, there were some problems. The rate of total immigrants is strongly correlated with the other subdomain, low, medium, and highly educated immigrants. Moreover, the two terms of dependency ratio are also correlated. Thus, we added those variables separately to avoid multicollinearity. The seven combinations of the explanatory variables are shown below. For each of the seven equations, we estimated the effect on the social expenditure in the host countries, with two subdomains: elderly and health.

(1) total immigrants

$$(socx)_{it} = \alpha + \beta_1(total\_immi)_{1it-1} + \beta_2(unemp) + \beta_3(pop65)_t + \beta_4(fm\_lfp)_t + \beta_5(trd)_t + \beta_6(ex\_rate)_{t-1} + \beta_7(cpi)_{t-1} + \beta_8(ex\_opne)_{t-1} + u_{it}$$

(2) unskilled immigrant

$$(socx)_{it} = \alpha + \beta_1(low\_immi)_{1it-1} + \beta_2(unemp) + \beta_3(pop65)_t + \beta_4(fm\_lfp)_t + \beta_5(trd)_t + \beta_6(ex\_rate)_{t-1} + \beta_7(cpi)_{t-1} + \beta_8(ex\_opne)_{t-1} + u_{it}$$

(3) medium skilled immigrant

$$(socx)_{it} = \alpha + \beta_1(med\_immi)_{1it-1} + \beta_2(unemp) + \beta_3(pop65)_t + \beta_4(fm\_lfp)_t + \beta_5(trd)_t + \beta_6(ex\_rate)_{t-1} + \beta_7(cpi)_{t-1} + \beta_8(ex\_opne)_{t-1} + u_{it}$$

(4) highly skilled immigrant

$$(socx)_{it} = \alpha + \beta_1(high\_immi)_{1it-1} + \beta_2(unemp) + \beta_3(pop65)_t + \beta_4(fm\_lfp)_t + \beta_5(trd)_t + \beta_6(ex\_rate)_{t-1} + \beta_7(cpi)_{t-1} + \beta_8(ex\_opne)_{t-1} + u_{it}$$

(5) Unskilled immigrant and medium skilled immigrant

$$(socx)_{it} = \alpha + \beta_1(low\_immi)_{1it-1} + \beta_2(med\_immi)_{1it-1} + \beta_3(unemp) + \beta_4(pop65)_t + \beta_5(fm\_lfp)_t + \beta_6(trd)_t + \beta_7(ex\_rate)_{t-1} + \beta_8(cpi)_{t-1} + \beta_9(ex\_opne)_{t-1} + u_{it}$$

(6) medium skilled immigrant and highly skilled immigrant

$$(socx)_{it} = \alpha + \beta_1(med\_immi)_{1it-1} + \beta_2(high\_immi)_{1it-1} + \beta_3(unemp) + \beta_4(pop65)_t + \beta_5(fm\_lfp)_t + \beta_6(trd)_t + \beta_7(ex\_rate)_{t-1} + \beta_8(cpi)_{t-1} + \beta_9(ex\_opne)_{t-1} + u_{it}$$

(7) highly skilled immigrant and unskilled immigrant

$$(socx)_{it} = \alpha + \beta_1(high\_immi)_{1it-1} + \beta_2(low\_immi)_{1it-1} + \beta_3(unemp) + \beta_4(pop65)_t + \beta_5(fm\_lfp)_t + \beta_6(trd)_t + \beta_7(ex\_rate)_{t-1} + \beta_8(cpi)_{t-1} + \beta_9(ex\_opne)_{t-1} + u_{it}$$

The models have at most seven control variables: unemployment rate, dependency ratio of the elderly, female labor force participation rate, trade union density, exchange rate, CPI, and the ratio of exports to GDP. We selected the first five variables from (Soroka et al. 2016,8), and they capture the demographic demand for social expenditure. Despite controlling for wage levels, which are closely related to the taxable income of individuals, all the data found in the OECD and UN databases have limited time periods. We gave priority to the sample size so trade union density was added, since trade unions often negotiate with employers on wages. The latter three were added to control for economic growth (Miyatake 2016, 38-52). This showed the effect of social expenditure on GDP, using such control variables. The dependent variable in our model also has GDP in its denominator, so the GDP growth itself can influence the correlation with some of the explanatory variables. Although their impacts will be comparatively vague in the estimation, in the general equilibrium approach, set by the theoretical researches, the dynamic mechanism of the production factors, which also causes the economy to converge to its optimal growth, should be considered.

Some explanatory variables have problems with endogeneity and simultaneity. Firstly, the direction of causality between social expenditure per GDP and the variables for controlling economic growth is ambiguous, as Miyatake (2016) uses instrumental variables for them. We considered the possibility of reverse causality but just added a 5-year lag to the variables. This is because they are not the main targets of the estimation and the possibility of rejection in the overidentification test would be high with more instrumental variables. Hence, a five-year lag is more suitable for the regression.

Secondly, decision making by the foreign-born regarding to which country to immigrate could be influenced by the welfare generosity of the receiving countries (Razin and Wahba 2015, 386-399). On the other hand, the number of immigrants affects social expenditure in the

host country at the same time. This simultaneity is likely to happen only in the same year as those immigrants who obtain a permanent residence allowance or citizenship. This is suggested as a magnet hypothesis by (Borjas 1999, 619-624), although they conclude the effect was not robust. This reverse causality is caused by the generosity of the welfare state as it was measured by Razin and Wahba only in cross-section estimation.

In the regression in this paper, however, the design of the welfare state is cancelled by the panel data analysis, so the bias is also deleted in our estimation. It is the generosity of the welfare state to which immigrants could react, but the characteristics in each country are deleted within the estimation. In many countries, it takes years for such rights to be bestowed on immigrants. Thus, the 5-year lag to the explanatory variable is supposed to capture the actual mechanism.

Finally, female labor participation[6], especially for married women, should be treated as carefully as the immigration level. In particular, it correlates with the social expenditure and substitution effect of immigrants (Soroka et al. 2016, 11). At the same time, it is also endogenous, probably influenced by social expenditure. The labor supply of women is elastic to their income with the endogeneity of taxation (Meghir and Phillips 2006, 26-27), and this argument can be applied to their disposable income.

There are two possible examples of how social expenditure influences the labor supply. Firstly, the decrease in benefits to a household would motivate married women to work. Secondly, the increase in the pension premium would impose a financial burden on them, thus encouraging them to seek employment. We cannot conclude which one overrides the other, but considering the current aging problem, the latter would be larger. To avoid such reverse causality, we conducted two-stage least squares analysis for factors other than the estimation for social expenditure for unemployment. The instrumental variables are the proportion of female seats in a parliament with one year lag and the length of maternity leave. The former term indicates women's social progress, and the latter is a proxy for companies' consideration for women.

Since the data for our model was panel data, we used the pooled ordinary least squares model and fixed effects to eliminate the effect of the structure of the welfare state. As the units are selected from OECD countries, based on the data source, they might have suffered from a variety of macro shocks such as a financial crisis at the global level. We added year dummy variables to control for the effect of such incidents. In most of the regressions, the year dummies are significant at the 1% level, and therefore only the result with the dummies is shown when it

[6] Women are different from immigrants in terms of the factor affecting their labor supply. They are supposed to be used to the welfare generosity in the country and react to policy changes, so its simultaneity problem cannot be solved.

comes to fixed effects. As the characteristics of each country, which cannot be quantified, are assumed not to be random but related to the explanatory variable because the selection of the sample countries is not randomized, random effects are not taken into consideration. As the time length and the variety of units are small, panel GMM are not appropriate for these models. (Kitamura 2005, 97-101)

2.4. Results

Models are used that mainly control for some biases, with five types of estimation models for each of the kinds of expenditure: univariate regression by OLS, multivariate regressions with OLS and IV excluding the control variables for GDP and including them, and with OLS and IV including them. The former three regressions, which omit some variables shown in the model specification part, were for robustness check of the regressions with all controls. Comparing these models, it seemed that the effect of immigration was captured differently depending on the control variables.

In the results of regressions[7], the significance of year dummies in fixed effects were mostly recognized, and the Welch F test to compare fixed effects and pooled OLS indicated FE is appropriate in most of the models. In addition, many of the F values in the first regression in 2SLS are greater than 10, indicating the instrumental variables are strongly correlated with the explanatory variable, even though they are less than the threshold in some of the robustness checks. The LM test also supports the irrelevance of IV with the error term of the main regression model. The Hausman test, however, does not approve only one of the pooled OLS and two-stage least squares, but the values of the immigration level in 2SLS differ greatly from that of OLS in many models. Thus, it seems that we should not disregard the simultaneity of the female labor force. The argument is the same for the fixed effect with instrumental variables, but unfortunately, the validity of the IVs cannot be examined.

[7] For all estimations, since the data is unbalanced panel data, we used heteroscedasticity and autocorrelation consistent standard error.

Table 2-1. Pooled OLS and FIxed Effects for social expenditure for old age

	Dependent variable= socx													
	1		2		3		4		5		6		7	
	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled
const	0.174	0.207	0.172	0.202	0.177	0.205	0.183	0.215	0.173	0.204	0.180	0.209	0.176	0.209
	(0.008)***	(0.014)***	(0.008)***	(0.012)***	(0.008)***	(0.205)***	(0.007)***	(0.013)***	(0.008)***	(0.014)***	(0.007)***	(0.014)***	(0.007)***	(0.013)***
total_immi	0.080	-0.017												
	(0.031)**	(0.108)												
low_immi			0.171	0.080					0.187	0.116			0.229	0.231
			(0.057)***	(0.146)					(0.095)*	(0.171)			(0.071)***	(0.14)
med_immi					0.196	0.002			-0.052	-0.147	0.286	0.425		
					(0.185)	(0.002)			(0.257)	(0.558)	(0.239)	(0.557)		
high_immi							-0.218	-0.383			-0.351	-0.565	-0.447	-0.565
							(0.348)	(0.217)*			(0.304)	(0.285)*	(0.268)	(0.189)***
unemp_rate														
pop65														
fem_lfp														
trd_un														
ex_rate														
cpi														
ex_open														
N	139	139	139	139	139	139	139	139	139	139	139	139	139	139
No. of countries	20	20	20	20	20	20	20	20	20	20	20	20	20	20
R-squared	0.864	0.001	0.866	0.004	0.862	0	0.862	0.034	0.866	0.006	0.865	0.050	0.870	0.063
Welch F test	0.000		0.000		0.000		0.000		0.000		0.000		0.000	
Wald test	0.000		0.000		0.000		0.000		0.000		0.000		0.000	

Each cell contains coefficient and (standard error) blow. The value of all tests is p value, ***p<0.01; **p<0.05; *p<0.1

Table 2-2. Pooled OLS and FIxed Effects for total social expenditure

	Dependent variable= socx													
	1		2		3		4		5		6		7	
	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled
const	0.116	0.012	0.119	-0.008	0.117	0.012	0.097	0.011	0.122	-0.032	0.118	0.011	0.122	-0.034
	(0.069)	(0.043)	(0.067)*	(0.045)	(0.075)	(0.042)	(0.077)	(0.044)	(0.068)*	(0.053)	(0.075)	(0.044)	(0.066)*	(0.042)
total_immi	0.161	0.008												
	(0.036)***	(0.079)												
low_immi			0.254	0.201					0.223	0.418			0.271	0.432
			(0.067)***	(0.108)*					(0.113)*	(0.225)*			(0.087)***	(0.145)***
med_immi					0.436	-0.242			0.118	-0.830	0.447	0.059		
					(0.199)**	(0.413)***			(0.28)	(0.548)	(0.231)*	(0.46)		
high_immi							0.167	-0.391			-0.037	-0.414	-0.128	-0.771
							(0.439)	(0.215)*			(0.359)	(0.262)	(0.298)	(0.213)***
unemp_rate	0.485	0.242	0.473	0.341	0.485	0.202	0.462	0.213	0.479	0.337	0.484	0.220	0.469	0.415
	(0.131)***	(0.164)	(0.127)***	(0.181)*	(0.132)***	(0.142)	(0.133)***	(0.158)	(0.127)***	(0.179)*	(0.132)***	(0.158)	(0.125)***	(0.187)**
pop65	0.141	0.687	0.133	0.668	0.160	0.710	0.183	0.656	0.133	0.720	0.159	0.648	0.131	0.581
	(0.376)	(0.25)**	(0.369)	(0.253)**	(0.378)	(0.24)	(0.374)	(0.218)***	(0.373)	(0.224)***	(0.379)	(0.218)***	(0.367)	(0.213)**
fem_lfp	-0.018	0.101	-0.018	0.116	0.000	0.114	0.047	0.145	-0.024	0.174	0.000	0.145	-0.018	0.219
	(0.098)	(0.066)	(0.095)	(0.069)	(0.097)	(0.074)	(0.114)	(0.078)*	(0.095)	(0.09)*	(0.098)	(0.078)*	(0.095)	(0.068)***
trd_un	-0.001	0.062	0.000	0.059	-0.019	0.058	-0.008	0.045	-0.003	0.046	-0.020	0.044	-0.004	0.024
	(0.091)	(0.032)*	(0.092)	(0.029)*	(0.088)	(0.034)	(0.094)	(0.036)	(0.093)	(0.028)	(0.094)	(0.036)	(0.095)	(0.03)
ex_rate														
cpi														
ex_open														
N	121	121	121	121	121	121	121	121	121	121	121	121	121	121
No. of countries	20	20	20	20	20	20	20	20	20	20	20	20	20	20
R-squared	0.899	0.364	0.901	0.390	0.895	0.371	0.889	0.398	0.901	0.444	0.895	0.398	0.901	0.489
Welch F test	0.000		0.000		0.000		0.000		0.000		0.000		0.000	
Wald test	0.001		0.004		0.003		0.008		0.002		0.004		0.003	

Each cell contains coefficient and (standard error) blow. The value of all tests is p value, ***p<0.01; **p<0.05; *p<0.1

Table 2-3. Two Stage Least Squares and FIxed Effects with Instrumental Variabless for total social expenditure

	Dependent variable= socx													
	1		2		Fixed		4		5		6		7	
	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled
const	0.166	-0.052	0.099	-0.138	0.080	-0.078	0.114	-0.019	0.085	-0.191	0.099	-0.040	0.113	-0.108
	(0.085)*	(0.076)	(0.073)	(0.094)	(0.074)	(0.099)	(0.073)	(0.071)	(0.075)	(0.097)**	(0.073)	(0.076)	(0.073)	(0.061)*
total_immi	-0.473	-0.069												
	(0.294)	(0.138)												
low_immi			0.439	0.412					0.264	0.636			0.257	0.687
			(0.302)	(0.153)***					(0.349)	(0.186)***			(0.328)	(0.183)***
med_immi					-0.695	-1.296			-0.548	-1.808	-0.730	-0.762		
					(0.389)*	(0.548)***			(0.449)	(0.521)***	(0.377)*	(0.547)		
high_immi							-0.507	-0.690			-0.528	-0.486	-0.410	-1.082
							(0.27)*	(0.273)**			(0.265)**	(0.303)	(0.295)	(0.319)***
unemp_rate	0.550	0.320	0.406	0.569	0.470	0.204	0.482	0.294	0.431	0.448	0.481	0.220	0.441	0.582
	(0.111)***	(0.178)*	(0.108)***	(0.195)***	(0.097)***	(0.216)	(0.096)***	(0.186)	(0.111)***	(0.208)**	(0.094)***	(0.202)	(0.11)***	(0.174)***
pop65	-0.398	0.529	-0.169	0.606	-0.279	0.736	-0.301	0.387	-0.234	0.900	-0.361	0.543	-0.255	0.397
	(0.278)	(0.419)	(0.261)	(0.463)	(0.261)	(0.384)	(0.262)	(0.386)	(0.264)	(0.383)**	(0.257)	(0.386)	(0.266)	(0.332)
fem_lfp	0.196	0.290	0.037	0.343	0.160	0.349	0.093	0.306	0.108	0.452	0.150	0.337	0.053	0.395
	(0.132)	(0.188)	(0.122)	(0.174)**	(0.115)	(0.205)	(0.106)	(0.184)*	(0.145)	(0.173)***	(0.112)	(0.193)*	(0.122)	(0.15)***
trd_un	0.105	0.024	0.134	0.032	0.133	0.003	0.116	0.008	0.143	-0.001	0.142	-0.001	0.129	0.003
	(0.084)	(0.048)	(0.085)	(0.037)	(0.084)	(0.048)*	(0.083)	(0.045)	(0.085)*	(0.038)	(0.082)*	(0.047)	(0.085)	(0.036)
ex_rate														
cpi														
ex_open														
N	78	78	78	78	78	78	78	78	78	78	78	78	78	78
No. of countries	20	20	20	20	20	20	20	20	20	20	20	20	20	20
R-squared	0.632	0.218	0.640868	0.249	0.638	0.288	0.645	0.306	0.648	0.378	0.666	0.324	0.653	0.448
Hausman test		0.011		0.009		0.013		0.044		0.011		0.025		0.143
LM test		0.896		0.895		0.496		0.889		0.518		0.619		0.854
F test		11.514		14.184		8.984		11.780		9.407		10.840		16.619

Each cell contains coefficient and (standard error) blow. The value of all tests other than F test is p value, ***p<0.01; **p<0.05; *p<0.1. F test is for the 1st stage of 2SLS, and the value is F statistics. LM test is the Overidentification test.

Table 2-4. Pooled OLS and FIxed Effects for total social expenditure

	Dependent variable= socx													
	1		2		3		4		5		6		7	
	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled
const	0.038	-0.033	0.027	-0.051	0.019	-0.020	0.042	-0.023	0.017	-0.031	0.029	-0.016	0.035	-0.036
	(0.082)	(0.059)	(0.085)	(0.063)	(0.073)	(0.036)	(0.085)	(0.053)	(0.074)	(0.053)	(0.071)	(0.051)	(0.085)	(0.052)
total_immi	-0.232	-0.060												
	(0.206)	(0.088)												
low_immi			0.354	0.237					0.199	0.500			0.289	0.626
			(0.247)	(0.253)					(0.294)	(0.312)			(0.192)	(0.285)**
med_immi					-0.710	-0.653			-0.616	-1.090	-0.722	-0.423		
					(0.333)**	(0.241)***			(0.354)	(0.581)*	(0.32)**	(0.534)		
high_immi							-0.356	-0.436			-0.374	-0.294	-0.251	-0.870
							(0.316)	(0.149)***			(0.307)	(0.217)	(0.29)	(0.267)***
unemp_rate	0.373	0.185	0.314	0.249	0.345	0.139	0.348	0.220	0.324	0.200	0.340	0.174	0.317	0.368
	(0.141)**	(0.156)	(0.14)**	(0.175)	(0.133)**	(0.106)	(0.136)**	(0.153)	(0.142)**	(0.148)	(0.131)**	(0.116)	(0.139)**	(0.184)*
pop65	0.263	0.509	0.380	0.546	0.302	0.527	0.301	0.422	0.338	0.563	0.281	0.455	0.355	0.361
	(0.3)	(0.269)*	(0.317)	(0.273)*	(0.269)	(0.136)	(0.307)	(0.248)	(0.28)	(0.22)**	(0.255)	(0.241)*	(0.312)	(0.225)
fem_lfp	0.039	-0.009	-0.005	-0.017	0.056	-0.007	0.011	0.029	0.040	-0.001	0.053	0.020	-0.004	0.075
	(0.119)	(0.109)	(0.108)	(0.11)	(0.126)	(0.056)***	(0.109)	(0.111)	(0.127)	(0.107)	(0.122)	(0.102)	(0.107)	(0.115)
trd_un	-0.005	0.075	0.006	0.091	0.016	0.074	-0.010	0.067	0.017	0.094	0.005	0.067	-0.002	0.084
	(0.074)	(0.041)*	(0.075)	(0.038)**	(0.067)	(0.022)	(0.077)	(0.04)	(0.069)	(0.03)***	(0.07)	(0.037)*	(0.078)	(0.032)**
ex_rate	0.045	0.091	0.043	0.094	0.038	0.080	0.048	0.070	0.039	0.067	0.042	0.069	0.046	0.041
	(0.034)	(0.039)**	(0.033)	(0.037)**	(0.033)	(0.024)	(0.036)	(0.036)*	(0.033)	(0.037)*	(0.035)	(0.038)*	(0.035)	(0.031)
cpi	0.104	0.063	0.098	0.061	0.129	0.078	0.093	0.075	0.126	0.093	0.127	0.081	0.096	0.093
	(0.055)*	(0.04)	(0.058)	(0.036)	(0.055)**	(0.025)	(0.055)	(0.038)*	(0.055)**	(0.027)***	(0.052)**	(0.033)**	(0.056)	(0.029)***
ex_open	-0.012	0.000	-0.030	-0.027	-0.029	-0.007	-0.016	0.001	-0.035	-0.052	-0.029	-0.002	-0.027	-0.047
	(0.036)	(0.03)	(0.036)	(0.033)	(0.033)	(0.016)***	(0.037)	(0.027)	(0.033)	(0.03)*	(0.032)	(0.025)	(0.037)	(0.023)*
N	121	121	121	121	121	121	121	121	121	121	121	121	121	121
No. of countries	20	20	20	20	20	20	20	20	20	20	20	20	20	20
R-squared	0.910	0.486	0.911	0.498	0.915	0.514	0.911	0.516	0.916	0.568	0.917	0.525	0.912	0.589
Welch F test	0.000		0.000		0.000		0.000		0.000		0.000		0.000	
Wald test	0.112		0.066		0.036		0.052		0.027		0.015		0.051	

Each cell contains coefficient and (standard error) blow. The value of all tests is p value, ***p<0.01; **p<0.05; *p<0.1

Table 2-5. Two Stage Least Squares and FIxed Effects with Instrumental Variabless for total social expenditure

	Dependent variable= socx													
	1		2		Fixed		4		5		6		7	
	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled
const	-0.002	-0.213	-0.013	-0.268	-0.048	-0.232	0.009	-0.139	-0.031	-0.285	-0.020	-0.165	0.001	-0.118
	(0.067)	(0.123)*	(0.065)	(0.129)**	(0.08)	(-0.232)*	(0.064)	(0.111)	(0.067)	(0.119)**	(0.061)	(0.109)	(0.062)	(0.094)
total_immi	-0.589	-0.082												
	(0.257)**	(0.116)												
low_immi			0.669	0.293					0.453	0.524			0.418	0.751
			(0.271)**	(0.221)					(0.324)	(0.228)**			(0.27)	(0.199)***
med_immi					-0.803	-1.009			-0.681	-1.422	-0.965	-0.750		
					(1.403)	(-1.009)***			(0.435)	(0.508)***	(0.323)***	(0.54)		
high_immi							-0.777	-0.510			-0.787	-0.329	-0.628	-1.052
							(0.245)***	(0.176)***			(0.227)***	(0.2)	(0.252)**	(0.273)***
unemp_rate	0.484	0.266	0.274	0.412	0.407	0.222	0.377	0.283	0.314	0.377	0.380	0.224	0.307	0.534
	(0.103)***	(0.18)	(0.104)***	(0.197)**	(0.092)***	(0.222)	(0.087)***	(0.183)	(0.109)***	(0.209)*	(0.08)***	(0.185)	(0.098)***	(0.174)***
pop65	-0.295	0.959	0.018	1.094	-0.080	1.036	-0.197	0.613	-0.051	1.125	-0.248	0.753	-0.110	0.297
	(0.249)	(0.338)***	(0.233)	(0.396)***	(0.25)	(1.036)	(0.231)	(0.288)**	(0.229)	(0.372)***	(0.212)	(0.31)**	(0.228)	(0.301)
fem_lfp	0.120	0.291	-0.109	0.391	0.185	0.339	-0.065	0.224	0.003	0.465	0.035	0.260	-0.127	0.304
	(0.166)	(0.284)	(0.162)	(0.288)	(0.207)	(0.339)	(0.146)	(0.269)	(0.198)	(0.259)*	(0.147)	(0.261)	(0.154)	(0.226)
trd_un	0.076	-0.014	0.117	-0.016	0.065	-0.024	0.106	0.004	0.115	-0.027	0.121	-0.006	0.124	0.025
	(0.092)	(0.068)	(0.092)	(0.075)	(0.094)	(-0.024)***	(0.088)	(0.06)	(0.091)	(0.068)	(0.08)	(0.059)	(0.087)	(0.053)
ex_rate	0.028	0.157	0.040	0.156	0.014	0.143	0.049	0.115	0.028	0.118	0.038	0.115	0.052	0.042
	(0.027)	(0.067)**	(0.027)	(0.071)**	(0.031)	(0.143)	(0.026)*	(0.059)*	(0.028)	(0.073)	(0.025)	(0.061)*	(0.026)**	(0.05)
cpi	0.213	-0.088	0.213	-0.139	0.207	-0.064	0.218	-0.006	0.228	-0.083	0.249	-0.002	0.226	0.048
	(0.058)***	(0.125)	(0.057)***	(0.136)	(0.073)***	(-0.064)***	(0.055)***	(0.108)	(0.056)***	(0.112)	(0.051)***	(0.097)	(0.055)***	(0.081)
ex_open	0.012	0.059	0.015	0.040	-0.019	0.056	0.029	0.037	0.003	0.024	0.015	0.041	0.029	-0.028
	(0.037)	(0.049)	(0.036)	(0.053)	(0.042)	(0.056)	(0.036)	(0.041)	(0.039)	(0.047)	(0.035)	(0.039)	(0.035)	(0.035)
N	78	78	78	78	78	78	78	78	78	78	78	78	78	78
No. of countries	20	20	20	20	20	20	20	20	20	20	20	20	20	20
R-squared	0.737	0.348	0.753	0.333	0.737	0.394	0.768	0.408	0.766	0.416	0.806	0.433	0.783	0.504
Hausman test		0.144		0.022		0.114		0.415		0.004		0.282		0.153
LM test		0.960		0.612		0.451		0.564		0.545		0.274		0.483
F test		14.122		13.822		11.109		15.696		12.392		15.608		15.552

Each cell contains coefficient and (standard error) blow. The value of all tests other than F test is p value, ***p<0.01; **p<0.05; *p<0.1. F test is for the 1st stage of 2SLS, and the value is F statistics. LM test is the Overidentification test.

Table 2-6. Pooled OLS and FIxed Effects for total social expenditure

	Dependent variable= old age													
	1		2		3		4		5		6		7	
	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled
const	0.062	0.072	0.060	0.067	0.063	0.070	0.061	0.074	0.062	0.070	0.063	0.072	0.061	0.072
	(0.004)***	(0.006)***	(0.004)***	(0.005)***	(0.004)***	(0.006)***	(0.003)***	(0.005)***	(0.004)***	(0.006)***	(0.004)***	(0.006)***	(0.003)***	(0.005)***
total_immi	-0.029	-0.067												
	(0.023)	(0.045)												
low_immi			-0.018	-0.033					0.061	0.024			-0.004	0.085
			(0.023)	(0.053)					(0.082)	(0.077)			(0.043)	(0.046)*
med_immi					-0.175	-0.180			-0.264	-0.215	-0.169	0.181		
					(0.133)	(0.205)			(0.212)	(0.257)	(0.157)	(0.215)		
high_immi							-0.109	-0.368			-0.024	-0.447	-0.104	-0.435
							(0.14)	(0.071)***			(0.185)	(0.117)***	(0.187)	(0.081)***
unemp_rate														
pop65														
fem_lfp														
trd_un														
ex_rate														
cpi														
ex_open														
N	123	123	123	123	123	123	123	123	123	123	123	123	123	123
No. of countries	20	20	20	20	20	20	20	20	20	20	20	20	20	20
R-squared	0.816	0.046	0.814	0.004	0.820	0.021	0.815	0.168	0.822	0.023	0.820	0.183	0.815	0.189
Welch F test	0.000		0.000		0.000		0.000		0.000		0.000		0.000	
Wald test	0.000		0.000		0.000		0.000		0.000		0.001		0.000	

Each cell contains coefficient and (standard error) blow. The value of all tests is p value, ***p<0.01; **p<0.05; *p<0.1

Table 2-7. Pooled OLS and FIxed Effects for social expenditure for old age

	Dependent variable= old age													
	1		2		3		4		5		6		7	
	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled
const	0.060	0.026	0.061	0.021	0.060	0.020	0.057	0.020	0.061	0.015	0.061	0.020	0.063	0.007
	(0.048)	(0.029)	(0.048)	(0.032)	(0.05)	(0.02)	(0.048)	(0.028)	(0.049)	(0.038)	(0.051)	(0.027)	(0.048)	(0.031)
total_immi	0.025	-0.053												
	(0.017)	(0.037)												
low_immi			0.044	-0.010					0.042	0.052			0.052	0.126
			(0.023)*	(0.056)					(0.05)	(0.123)			(0.03)*	(0.068)*
med_immi					0.067	-0.164			0.007	-0.238	0.077	0.127		
					(0.101)	(-0.164)***			(0.163)	(0.313)	(0.128)	(0.213)		
high_immi							-0.005	-0.340			-0.039	-0.391	-0.065	-0.454
							(0.126)	(0.08)***			(0.146)	(0.12)***	(0.129)	(0.107)***
unemp_rate	0.162	0.010	0.160	0.044	0.162	0.025	0.158	0.024	0.160	0.041	0.161	0.038	0.158	0.081
	(0.07)**	(0.08)	(0.069)**	(0.085)	(0.069)**	(0.025)	(0.068)**	(0.071)	(0.069)**	(0.086)	(0.068)**	(0.07)	(0.068)**	(0.081)
pop65	0.110	0.300	0.107	0.297	0.115	0.309	0.119	0.265	0.107	0.310	0.115	0.251	0.106	0.245
	(0.2)	(0.144)*	(0.199)	(0.153)*	(0.202)	(0.309)	(0.198)	(0.125)**	(0.2)	(0.152)*	(0.204)	(0.129)*	(0.2)	(0.124)*
fem_lfp	-0.048	-0.011	-0.050	-0.016	-0.045	-0.007	-0.037	0.022	-0.050	0.000	-0.045	0.021	-0.051	0.043
	(0.052)	(0.041)	(0.05)	(0.046)	(0.053)	(-0.007)***	(0.053)	(0.041)	(0.053)	(0.06)	(0.053)	(0.041)	(0.05)	(0.045)
trd_un	-0.024	0.020	-0.023	0.022	-0.027	0.020	-0.027	0.008	-0.024	0.019	-0.029	0.007	-0.025	0.001
	(0.044)	(0.018)	(0.044)	(0.018)	(0.044)	(0.02)	(0.045)	(0.017)	(0.045)	(0.019)	(0.047)	(0.017)	(0.046)	(0.017)
ex_rate														
cpi														
ex_open														
N	116	116	116	116	116	116	116	116	116	116	116	116	116	116
No. of countries	20	20	20	20	20	20	20	20	20	20	20	20	20	20
R-squared	0.879	0.203	0.880	0.179	0.879	0.348	0.878	0.295	0.880	0.198	0.879	0.301	0.880	0.330
Welch F test	0.000		0.000		0.000		0.000		0.000		0.000		0.000	
Wald test	0.027		0.038		0.054		0.032		0.087		0.075		0.090	

Each cell contains coefficient and (standard error) blow. The value of all tests is p value, ***p<0.01; **p<0.05; *p<0.1

Table 2-8. Two Stage Least Squares and FIxed Effects with Instrumental Variabless for old age

	Dependent variable = old age													
	1		2		3		4		5		6		7	
	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled
const	0.107	-0.041	0.064	-0.076	0.063	-0.054	0.079	-0.027	0.060	-0.092	0.077	-0.033	0.081	-0.057
	(0.038)***	(0.037)	(0.036)*	(0.044)*	(0.036)*	(0.043)	(0.034)**	(0.032)	(0.038)	(0.047)*	(0.035)**	(0.034)	(0.034)**	(0.032)*
total_immi	-0.430	-0.045												
	(0.151)***	(0.048)												
low_immi			-0.106	0.125					-0.144	0.203			-0.263	0.226
			(0.152)	(0.077)					(0.177)	(0.102)**			(0.157)*	(0.089)**
med_immi					-0.040	-0.522			-0.120	-0.681	-0.084	-0.240		
					(0.197)	(0.256)***			(0.232)	(0.27)**	(0.19)	(0.308)		
high_immi							-0.285	-0.300			-0.293	-0.236	-0.394	-0.427
							(0.134)**	(0.079)***			(0.137)**	(0.095)**	(0.146)***	(0.096)***
unemp_rate	0.214	0.026	0.165	0.119	0.149	-0.006	0.151	0.018	0.170	0.071	0.151	-0.004	0.193	0.108
	(0.05)***	(0.08)	(0.053)***	(0.096)	(0.047)***	(0.087)	(0.045)***	(0.08)	(0.055)***	(0.091)	(0.045)***	(0.077)	(0.051)***	(0.08)
pop65	-0.054	0.572	0.108	0.611	0.120	0.645	0.076	0.515	0.091	0.700	0.066	0.558	0.022	0.529
	(0.13)	(0.166)***	(0.128)	(0.186)***	(0.128)	(0.139)	(0.123)	(0.149)***	(0.133)	(0.143)***	(0.125)	(0.127)***	(0.124)	(0.129)***
fem_lfp	0.017	0.030	-0.039	0.050	-0.051	0.057	-0.072	0.032	-0.023	0.091	-0.066	0.042	-0.035	0.060
	(0.06)	(0.079)	(0.062)	(0.076)	(0.055)	(0.085)	(0.05)	(0.073)	(0.073)	(0.077)	(0.053)	(0.078)	(0.058)	(0.058)
trd_un	0.004	0.017	-0.016	0.021	-0.009	0.009	-0.002	0.012	-0.012	0.008	0.003	0.009	-0.012	0.010
	(0.041)	(0.019)	(0.045)	(0.016)	(0.045)	(0.02)	(0.042)	(0.017)	(0.046)	(0.016)	(0.044)	(0.019)	(0.042)	(0.012)
ex_rate														
cpi														
ex_open														
N	74	74	74	74	74	74	74	74	74	74	74	74	74	139
No. of countries	20	20	20	20	20	20	20	20	20	20	20	20	20	20
R-squared	0.542	0.330	0.472	0.328	0.472	0.376	0.527	0.422	0.467	0.421	0.526	0.431	0.544	0.511
Hausman test		0.249		0.217		0.237		0.680		0.251		0.579		0.761
LM test		0.382		0.289		0.555		0.346		0.505		0.435		0.228
F test		11.186		13.926		8.337		11.639		8.645		10.498		16.555

Each cell contains coefficient and (standard error) blow. The value of all tests other than F test is p value, ***p<0.01; **p<0.05; *p<0.1. F test is for the 1st stage of 2SLS, and the value is F statistics. LM test is the Overidentification test.

Table 2-9. Pooled OLS and FIxed Effects for social expenditure for old age

	Dependent variable= old age													
	1		2		3		4		5		6		7	
	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled
const	0.036	0.043	0.032	0.032	0.026	0.048	0.034	0.049	0.026	0.047	0.028	0.052	0.032	0.046
	(0.047)	(0.048)	(0.05)	(0.05)	(0.042)	(0.048)	(0.05)	(0.045)	(0.043)	(0.046)	(0.042)	(0.043)	(0.051)	(0.042)
total_immi	-0.127	-0.061												
	(0.129)	(0.053)												
low_immi			0.133	0.093					0.028	0.242			0.132	0.394
			(0.104)	(0.142)					(0.116)	(0.151)			(0.109)	(0.152)**
med_immi					-0.466	-0.356			-0.453	-0.582	-0.470	-0.093		
					(0.115)***	(-0.356)***			(0.131)	(0.285)*	(0.119)***	(0.277)		
high_immi							-0.059	-0.344			-0.078	-0.313	-0.007	-0.625
							(0.103)	(0.071)***			(0.093)	(0.114)**	(0.109)	(0.16)***
unemp_rate	0.129	-0.068	0.101	-0.039	0.107	-0.090	0.117	-0.042	0.104	-0.075	0.107	-0.053	0.101	0.032
	(0.047)**	(0.079)	(0.05)*	(0.082)	(0.04)**	(-0.09)	(0.041)**	(0.076)	(0.047)**	(0.075)	(0.04)**	(0.058)	(0.05)*	(0.075)
pop65	0.171	0.230	0.230	0.262	0.192	0.244	0.203	0.167	0.197	0.262	0.186	0.173	0.229	0.136
	(0.149)	(0.153)	(0.174)	(0.16)	(0.129)	(0.244)	(0.169)	(0.136)	(0.135)	(0.138)*	(0.127)	(0.137)	(0.173)	(0.112)
fem_lfp	-0.002	-0.100	-0.024	-0.108	0.014	-0.106	-0.017	-0.072	0.011	-0.108	0.013	-0.075	-0.024	-0.047
	(0.045)	(0.066)	(0.038)	(0.069)	(0.041)	(-0.106)***	(0.038)	(0.062)	(0.041)	(0.068)	(0.041)	(0.058)	(0.038)	(0.061)
trd_un	-0.029	0.041	-0.024	0.051	-0.015	0.044	-0.028	0.036	-0.015	0.055	-0.017	0.036	-0.024	0.048
	(0.04)	(0.023)*	(0.041)	(0.023)**	(0.036)	(0.044)	(0.042)	(0.021)	(0.037)	(0.019)**	(0.038)	(0.021)*	(0.043)	(0.017)**
ex_rate	-0.001	0.023	-0.003	0.026	-0.008	0.019	-0.001	0.008	-0.008	0.012	-0.007	0.007	-0.003	-0.012
	(0.012)	(0.024)	(0.012)	(0.024)	(0.011)	(0.019)	(0.012)	(0.022)	(0.011)	(0.022)	(0.011)	(0.022)	(0.012)	(0.02)
cpi	0.059	0.040	0.058	0.037	0.079	0.048	0.055	0.048	0.079	0.056	0.078	0.050	0.058	0.060
	(0.031)*	(0.024)	(0.032)*	(0.022)	(0.032)**	(0.048)	(0.031)*	(0.022)**	(0.031)**	(0.018)***	(0.031)**	(0.02)**	(0.032)*	(0.017)***
ex_open	-0.030	-0.028	-0.039	-0.044	-0.045	-0.037	-0.033	-0.030	-0.046	-0.061	-0.045	-0.031	-0.038	-0.064
	(0.01)***	(0.019)	(0.013)***	(0.022)*	(0.01)***	(-0.037)***	(0.01)***	(0.018)	(0.011)***	(0.02)***	(0.009)***	(0.017)*	(0.012)***	(0.017)***
N	116	116	116	116	116	116	116	116	116	116	116	116	116	116
No. of countries	20	20	20	20	20	20	20	20	20	20	20	20	20	20
R-squared	0.903	0.325	0.903	0.318	0.912	0.348	0.902	0.401	0.912	0.400	0.912	0.403	0.903	0.520
Welch F test	0.000		0.000		0.000		0.000		0.000		0.000		0.000	
Wald test	0.011		0.005		0.004		0.001		0.004		0.000		0.001	

Each cell contains coefficient and (standard error) blow. The value of all tests is p value, ***p<0.01; **p<0.05; *p<0.1

Table 2-10. Two Stage Least Squares and FIxed Effects with Instrumental Variabless for old age

	Dependent variable = old age													
	1		2		3		4		5		6		7	
	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled
const	0.018	-0.095	0.011	-0.115	0.014	-0.089	0.018	-0.056	0.006	-0.112	0.015	-0.062	0.020	-0.035
	(0.026)	(0.055)*	(0.029)	(0.051)**	(0.034)	(-0.089)*	(0.027)	(0.054)	(0.029)	(0.047)**	(0.027)	(0.052)	(0.028)	(0.041)
total_immi	-0.406	-0.012												
	(0.107)***	(0.053)												
low_immi			-0.019	0.181					-0.122	0.283			-0.134	0.428
			(0.117)	(0.116)					(0.134)	(0.126)**			(0.119)	(0.115)***
med_immi					0.342	-0.359			-0.439	-0.584	-0.358	-0.258		
					(0.572)	(-0.359)***			(0.204)**	(0.269)**	(0.156)**	(0.279)		
high_immi							-0.214	-0.197			-0.236	-0.138	-0.272	-0.510
							(0.108)**	(0.075)***			(0.102)**	(0.091)	(0.119)**	(0.125)***
unemp_rate	0.182	-0.025	0.123	0.033	0.121	-0.052	0.116	-0.032	0.140	0.013	0.115	-0.052	0.138	0.079
	(0.039)***	(0.072)	(0.044)***	(0.077)	(0.045)***	(-0.052)	(0.036)***	(0.083)	(0.045)***	(0.077)	(0.035)***	(0.076)	(0.042)***	(0.075)
pop65	0.121	0.703	0.292	0.761	0.334	0.686	0.254	0.538	0.233	0.740	0.213	0.569	0.223	0.365
	(0.098)	(0.144)***	(0.103)***	(0.152)***	(0.128)***	(0.686)	(0.099)**	(0.113)***	(0.101)**	(0.151)***	(0.093)**	(0.113)***	(0.102)**	(0.114)***
fem_lfp	0.109	-0.009	0.053	0.034	0.034	-0.010	0.022	-0.046	0.104	0.054	0.042	-0.038	0.041	-0.010
	(0.059)*	(0.13)	(0.066)	(0.127)	(0.083)	(-0.01)***	(0.058)	(0.126)	(0.08)	(0.112)	(0.06)	(0.122)	(0.063)	(0.098)
trd_un	-0.087	0.015	-0.108	0.017	-0.124	0.015	-0.094	0.024	-0.094	0.015	-0.076	0.021	-0.097	0.039
	(0.035)**	(0.027)	(0.041)***	(0.029)	(0.05)**	(0.015)	(0.038)**	(0.024)	(0.039)**	(0.027)	(0.036)**	(0.025)	(0.039)**	(0.019)**
ex_rate	-0.001	0.072	0.000	0.067	0.008	0.064	0.006	0.053	-0.012	0.049	-0.002	0.052	0.007	0.009
	(0.012)	(0.025)***	(0.013)	(0.023)***	(0.021)	(0.064)	(0.013)	(0.024)**	(0.015)	(0.024)**	(0.013)	(0.024)**	(0.013)	(0.017)
cpi	0.083	-0.022	0.077	-0.041	0.061	-0.001	0.079	0.019	0.093	-0.011	0.096	0.023	0.074	0.050
	(0.023)***	(0.059)	(0.027)***	(0.06)	(0.039)	(-0.001)***	(0.025)***	(0.054)	(0.026)***	(0.046)	(0.024)***	(0.048)	(0.025)***	(0.039)
ex_open	-0.060	0.002	-0.065	-0.011	-0.061	-0.001	-0.057	-0.007	-0.072	-0.022	-0.062	-0.007	-0.056	-0.050
	(0.014)***	(0.022)	(0.016)***	(0.024)	(0.022)***	(-0.001)***	(0.016)***	(0.02)	(0.018)***	(0.021)	(0.016)***	(0.019)	(0.016)***	(0.018)***
N	74	74	74	74	74	74	74	74	74	74	74	74	74	139
No. of countries	20	20	20	20	20	20	20	20	20	20	20	20	20	20
R-squared	0.775	0.454	0.713	0.478	0.631	0.487	0.751	0.480	0.735	0.542	0.778	0.497	0.750	0.622
Hausman test		0.903		0.391		0.936		0.513		0.218		0.614		0.825
LM test		0.559		0.306		0.984		0.945		0.835		0.817		0.995
F test		14.182		13.776		11.459		15.869		13.186		16.500		15.678

Each cell contains coefficient and (standard error) blow. The value of all tests other than F test is p value, ***p<0.01; **p<0.05; *p<0.1. F test is for the 1st stage of 2SLS, and the value is F statistics. LM test is the Overidentification test.

Table 2-11. Pooled OLS and FIxed Effects for social expenditure for health

	Dependent variable= health													
	1		2		3		4		5		6		7	
	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled
const	0.042	0.051	0.042	0.052	0.046	0.007	0.044	0.051	0.042	0.052	0.043	0.051	0.042	0.050
	(0.002)***	(0.002)***	(0.002)***	(0.003)***	(0.002)***	(0.007)*	(0.002)***	(0.003)***	(0.002)***	(0.003)***	(0.002)***	(0.003)***	(0.002)***	(0.003)***
total_immi	0.043	0.040												
	(0.005)***	(0.016)**												
low_immi			0.068	0.046					0.065	0.035			0.070	0.007
			(0.01)***	(0.034)					(0.023)**	(0.052)			(0.02)***	(0.032)
med_immi					-0.024	0.752			0.011	0.041	0.098	-0.046		
					(0.069)	(0.752)***			(0.057)	(0.137)	(0.053)*	(0.109)		
high_immi							0.081	0.151			0.030	0.170	-0.011	0.145
							(0.122)	(0.063)**			(0.095)	(0.067)**	(0.092)	(0.069)*
unemp_rate														
pop65														
fem_lfp														
trd_un														
ex_rate														
cpi														
ex_open														
N	122	122	122	122	122	122	122	122	122	122	122	122	122	122
No. of countries	20	20	20	20	20	20	20	20	20	20	20	20	20	20
R-squared	0.859	0.052	0.860	0.024	0.847	0.326	0.849	0.089	0.860	0.026	0.854	0.092	0.860	0.090
Welch F test	0.000		0.000		0.000		0.000		0.000		0.000		0.000	
Wald test	0.000		0.000		0.000		0.000		0.000		0.000		0.000	

Each cell contains coefficient and (standard error) blow. The value of all tests is p value, ***p<0.01; **p<0.05; *p<0.1

Table 2-12. Pooled OLS and FIxed Effects for social expenditure for health

	Dependent variable= health													
	1		2		3		4		5		6		7	
	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled
const	0.045	0.010	0.046	0.006	0.044	0.014	0.039	0.014	0.046	0.002	0.044	0.014	0.047	0.006
	(0.017)**	(0.009)	(0.016)**	(0.01)	(0.017)**	(0.014)	(0.018)**	(0.01)	(0.016)**	(0.012)	(0.016)**	(0.01)	(0.016)***	(0.01)
total_immi	0.040	0.035												
	(0.016)**	(0.019)*												
low_immi			0.065	0.078					0.063	0.120			0.070	0.081
			(0.024)**	(0.03)**					(0.028)**	(0.048)**			(0.029)**	(0.034)**
med_immi					0.095	0.009			0.005	-0.163	0.096	-0.054		
					(0.066)	(0.009)*			(0.063)	(0.117)	(0.068)	(0.119)		
high_immi							0.040	0.062			-0.003	0.084	-0.041	-0.011
							(0.104)	(0.061)			(0.08)	(0.069)	(0.069)	(0.063)
unemp_rate	0.026	0.055	0.022	0.071	0.026	0.031	0.021	0.035	0.023	0.069	0.026	0.028	0.021	0.071
	(0.027)	(0.046)	(0.026)	(0.049)	(0.028)	(0.031)	(0.025)	(0.042)	(0.027)	(0.047)	(0.027)	(0.04)	(0.024)	(0.049)
pop65	-0.014	0.095	-0.018	0.091	-0.006	0.097	0.000	0.103	-0.018	0.100	-0.006	0.109	-0.019	0.090
	(0.1)	(0.059)	(0.099)	(0.056)	(0.099)	(0.097)	(0.104)	(0.055)*	(0.1)	(0.049)*	(0.099)	(0.052)**	(0.098)	(0.053)
fem_lfp	0.009	0.063	0.007	0.071	0.015	0.065	0.025	0.059	0.007	0.082	0.015	0.059	0.007	0.073
	(0.031)	(0.016)***	(0.031)	(0.017)***	(0.028)	(0.065)	(0.03)	(0.019)***	(0.032)	(0.021)***	(0.029)	(0.02)***	(0.032)	(0.018)***
trd_un	-0.014	-0.026	-0.013	-0.028	-0.019	-0.027	-0.017	-0.025	-0.013	-0.031	-0.019	-0.024	-0.014	-0.029
	(0.024)	(0.007)***	(0.024)	(0.007)***	(0.022)	(-0.027)***	(0.024)	(0.009)***	(0.024)	(0.006)***	(0.024)	(0.009)**	(0.025)	(0.008)***
ex_rate														
cpi														
ex_open														
N	116	116	116	116	116	116	116	116	116	116	116	116	116	116
No. of countries	20	20	20	20	20	20	20	20	20	20	20	20	20	20
R-squared	0.853	0.368	0.855	0.394	0.849	0.332	0.844	0.345	0.855	0.425	0.849	0.349	0.856	0.394
Welch F test	0.000		0.000		0.000		0.000		0.000		0.000		0.000	
Wald test	0.006		0.004		0.015		0.004		0.008		0.014		0.001	

Each cell contains coefficient and (standard error) blow. The value of all tests is p value, ***p<0.01; **p<0.05; *p<0.1

Table 2-13. Two Stage Least Squares and FIxed Effects with Instrumental Variabless for social expenditure for health

	Dependent variable= health													
	1		2		3		4		5		6		7	
	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled
const	0.086	-0.002	0.044	-0.015	0.044	0.007	0.052	0.007	0.044	-0.021	0.051	0.001	0.052	-0.011
	(0.023)***	(0.016)	(0.021)**	(0.02)	(0.021)**	(0.022)	(0.02)**	(0.017)	(0.022)**	(0.02)	(0.02)**	(0.019)	(0.02)**	(0.017)
total_immi	-0.147	0.034												
	(0.09)	(0.03)												
low_immi			0.017	0.120					0.021	0.153			-0.057	0.137
			(0.088)	(0.039)***					(0.102)	(0.043)***			(0.093)	(0.043)***
med_immi					0.007	-0.173			0.019	-0.293	-0.018	-0.262		
					(0.114)	(0.158)***			(0.133)	(0.139)**	(0.111)	(0.14)*		
high_immi							-0.160	0.007			-0.162	0.076	-0.183	-0.072
							(0.079)**	(0.074)			(0.08)**	(0.078)	(0.087)**	(0.073)
unemp_rate	0.067	0.076	0.042	0.109	0.045	0.029	0.046	0.052	0.042	0.087	0.046	0.028	0.055	0.107
	(0.03)**	(0.043)*	(0.031)	(0.045)**	(0.027)	(0.048)	(0.026)*	(0.046)	(0.032)	(0.044)**	(0.027)*	(0.05)	(0.03)*	(0.044)**
pop65	-0.199	0.061	-0.137	0.073	-0.138	0.070	-0.165	0.052	-0.134	0.112	-0.168	0.098	-0.177	0.059
	(0.077)**	(0.075)	(0.074)*	(0.067)	(0.074)*	(0.077)	(0.072)**	(0.08)	(0.077)*	(0.055)**	(0.073)**	(0.076)	(0.074)**	(0.062)
fem_lfp	0.029	0.098	0.002	0.110	0.005	0.101	-0.004	0.094	0.000	0.127	-0.003	0.105	0.004	0.112
	(0.036)	(0.041)**	(0.036)	(0.039)***	(0.032)	(0.051)	(0.029)	(0.045)**	(0.042)	(0.041)***	(0.031)	(0.049)**	(0.034)	(0.038)***
trd_un	0.046	-0.033	0.042	-0.033	0.041	-0.038	0.046	-0.034	0.041	-0.039	0.047	-0.037	0.044	-0.035
	(0.025)*	(0.01)***	(0.026)	(0.009)***	(0.026)	(0.011)***	(0.025)*	(0.011)***	(0.026)	(0.009)***	(0.025)*	(0.012)***	(0.025)*	(0.009)***
ex_rate														
cpi														
ex_open														
N	74	74	74	74	74	74	74	74	74	74	74	74	74	74
No. of countries	20	20	20	20	20	20	20	20	20	20	20	20	20	20
R-squared	0.823	0.292	0.809	0.341	0.809	0.286	0.824	0.270	0.809	0.394	0.824	0.308	0.827	0.343
Hausman test		0.115		0.193		0.235		0.087		0.237		0.041		0.204
LM test		0.730		0.666		0.994		0.818		0.945		0.925		0.670
F test		11.186		13.926		8.337		11.639		8.645		10.498		16.555

Each cell contains coefficient and (standard error) blow. The value of all tests other than F test is p value, ***p<0.01; **p<0.05; *p<0.1. F test is for the 1st stage of 2SLS, and the value is F statistics. LM test is the Overidentification test.

Table 2-14. Pooled OLS and FIxed Effects for social expenditure for health

	Dependent variable= health													
	1		2		3		4		5		6		7	
	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled
const	0.031	0.006	0.029	0.005	0.027	0.013	0.033	0.007	0.027	0.012	0.030	0.011	0.031	0.006
	(0.023)	(0.014)	(0.023)	(0.014)	(0.021)	(0.013)	(0.023)	(0.014)	(0.021)	(0.013)	(0.02)	(0.014)	(0.023)	(0.013)
total_immi	-0.028	0.027												
	(0.069)	(0.024)												
low_immi			0.117	0.098					0.080	0.164			0.108	0.111
			(0.046)**	(0.06)					(0.049)	(0.074)**			(0.05)**	(0.08)
med_immi					-0.192	-0.107			-0.155	-0.260	-0.197	-0.209		
					(0.078)**	(-0.107)***			(0.078)	(0.151)	(0.073)**	(0.133)		
high_immi							-0.074	0.051			-0.082	0.122	-0.031	-0.028
							(0.069)	(0.047)			(0.064)	(0.054)**	(0.071)	(0.082)
unemp_rate	0.010	0.045	-0.007	0.055	0.004	0.028	0.007	0.037	-0.005	0.038	0.003	0.013	-0.006	0.058
	(0.031)	(0.049)	(0.029)	(0.051)	(0.029)	(0.028)	(0.03)	(0.047)	(0.029)	(0.042)	(0.03)	(0.038)	(0.03)	(0.053)
pop65	0.017	0.044	0.045	0.043	0.018	0.031	0.019	0.047	0.034	0.044	0.012	0.059	0.041	0.038
	(0.104)	(0.058)	(0.103)	(0.056)	(0.098)	(0.031)	(0.101)	(0.056)	(0.1)	(0.043)	(0.094)	(0.05)	(0.102)	(0.052)
fem_lfp	0.039	0.037	0.029	0.039	0.048	0.041	0.035	0.035	0.041	0.039	0.047	0.028	0.029	0.042
	(0.021)*	(0.032)	(0.017)	(0.03)	(0.022)**	(0.041)	(0.019)*	(0.033)	(0.02)*	(0.028)	(0.021)**	(0.031)	(0.017)	(0.033)
trd_un	-0.021	-0.018	-0.019	-0.016	-0.016	-0.021	-0.023	-0.019	-0.015	-0.014	-0.018	-0.018	-0.020	-0.016
	(0.019)	(0.009)*	(0.018)	(0.009)*	(0.017)	(-0.021)***	(0.019)	(0.01)*	(0.017)	(0.008)	(0.017)	(0.009)**	(0.019)	(0.009)*
ex_rate	0.010	0.014	0.008	0.011	0.007	0.009	0.010	0.015	0.007	0.004	0.008	0.014	0.009	0.009
	(0.01)	(0.008)	(0.009)	(0.009)	(0.009)	(0.009)	(0.01)	(0.008)	(0.009)	(0.009)	(0.009)	(0.009)	(0.01)	(0.009)
cpi	0.005	0.017	0.005	0.020	0.013	0.022	0.003	0.017	0.013	0.028	0.012	0.021	0.005	0.021
	(0.016)	(0.011)	(0.016)	(0.01)*	(0.017)	(0.022)	(0.015)	(0.011)	(0.016)	(0.01)**	(0.016)	(0.011)*	(0.016)	(0.01)**
ex_open	-0.019	-0.002	-0.025	-0.008	-0.025	0.001	-0.020	0.000	-0.028	-0.016	-0.025	-0.002	-0.025	-0.009
	(0.016)	(0.007)	(0.015)	(0.008)	(0.014)*	(0.001)*	(0.016)	(0.007)	(0.015)*	(0.008)*	(0.014)	(0.006)	(0.015)	(0.008)
N	116	116	116	116	116	116	116	116	116	116	116	116	116	116
No. of countries	20	20	20	20	20	20	20	20	20	20	20	20	20	20
R-squared	0.862	0.424	0.866	0.450	0.915	0.867	0.863	0.420	0.869	0.505	0.869	0.453	0.866	0.451
Welch F test	0.000		0.000		0.000		0.000		0.000		0.000		0.000	
Wald test	0.001		0.000		0.000		0.000		0.000		0.000		0.000	

Each cell contains coefficient and (standard error) blow. The value of all tests is p value, ***p<0.01; **p<0.05; *p<0.1

Table 2-15. Two Stage Least Squares and FIxed Effects with Instrumental Variabless for social expenditure for health

	Dependent variable= health													
	1		2		3		4		5		6		7	
	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled	Fixed	Pooled
const	0.020	-0.018	0.017	-0.021	0.020	-0.006	0.023	-0.017	0.018	-0.019	0.024	-0.023	0.024	-0.010
	(0.02)	(0.032)	(0.021)	(0.032)	(0.024)	(-0.006)	(0.02)	(0.03)	(0.022)	(0.027)	(0.021)	(0.027)	(0.02)	(0.027)
total_immi	-0.148	0.027												
	(0.084)*	(0.023)												
low_immi			0.039	0.112					0.046	0.169			-0.047	0.143
			(0.084)	(0.048)**					(0.1)	(0.052)***			(0.087)	(0.061)**
med_immi					0.328	-0.192			0.014	-0.327	-0.016	-0.266		
					(0.399)	(-0.192)***			(0.153)	(0.127)***	(0.121)	(0.128)**		
high_immi							-0.184	0.041			-0.187	0.102	-0.204	-0.064
							(0.079)**	(0.049)			(0.079)**	(0.058)*	(0.086)**	(0.072)
unemp_rate	0.046	0.065	0.017	0.087	0.025	0.038	0.020	0.055	0.015	0.076	0.020	0.035	0.028	0.092
	(0.031)	(0.045)	(0.032)	(0.046)*	(0.031)	(0.038)	(0.027)	(0.045)	(0.034)	(0.04)*	(0.027)	(0.043)	(0.031)	(0.045)**
pop65	-0.155	0.077	-0.085	0.073	-0.055	0.031	-0.126	0.080	-0.085	0.062	-0.130	0.113	-0.137	0.022
	(0.077)**	(0.091)	(0.074)	(0.097)	(0.089)	(0.031)	(0.072)*	(0.084)	(0.076)	(0.086)	(0.072)*	(0.081)	(0.074)*	(0.083)
fem_lfp	0.031	0.073	0.003	0.087	-0.007	0.062	-0.014	0.069	-0.003	0.099	-0.016	0.078	-0.007	0.080
	(0.046)	(0.076)	(0.048)	(0.073)	(0.058)	(0.062)	(0.043)	(0.077)	(0.06)	(0.065)	(0.047)	(0.073)	(0.046)	(0.069)
trd_un	0.030	-0.032	0.025	-0.031	0.007	-0.033	0.034	-0.033	0.026	-0.032	0.036	-0.036	0.033	-0.028
	(0.027)	(0.017)*	(0.029)	(0.016)*	(0.035)	(-0.033)***	(0.028)	(0.016)**	(0.029)	(0.016)**	(0.028)	(0.016)**	(0.028)	(0.014)**
ex_rate	0.013	0.023	0.013	0.017	0.021	0.015	0.019	0.024	0.014	0.006	0.018	0.023	0.019	0.009
	(0.009)	(0.011)**	(0.01)	(0.012)	(0.015)	(0.015)	(0.009)**	(0.011)**	(0.011)	(0.012)	(0.01)*	(0.011)**	(0.009)**	(0.01)
cpi	0.030	0.005	0.030	0.005	0.012	0.027	0.029	0.006	0.030	0.021	0.030	0.011	0.027	0.017
	(0.018)	(0.034)	(0.02)	(0.033)	(0.027)	(0.027)	(0.018)	(0.033)	(0.02)	(0.028)	(0.018)	(0.029)	(0.019)	(0.027)
ex_open	-0.005	0.006	-0.006	-0.001	-0.003	0.005	0.000	0.008	-0.005	-0.008	0.000	0.008	0.000	-0.007
	(0.011)	(0.012)	(0.012)	(0.011)	(0.015)	(0.005)	(0.012)	(0.011)	(0.013)	(0.011)	(0.012)	(0.011)	(0.012)	(0.01)
N	74	74	74	74	74	74	74	74	74	74	74	74	74	74
No. of countries	20	20	20	20	20	20	20	20	20	20	20	20	20	20
R-squared	0.850	0.351	0.838	0.382	0.803	0.380	0.856	0.347	0.838	0.457	0.856	0.398	0.857	0.395
Hausman test		0.503		0.284		0.803		0.561		0.137		0.346		0.374
LM test		0.884		0.946		0.267		0.800		0.328		0.413		0.758
F test		14.182		13.776		11.459		15.869		13.186		16.500		15.678

Each cell contains coefficient and (standard error) blow. The value of all tests other than F test is p value, ***p<0.01; **p<0.05; *p<0.1. F test is for the 1st stage of 2SLS, and the value is F statistics. LM test is the Overidentification test.

Firstly, the impact on the total social expenditure differs depending on whether the model controls for the effect of the exchange rate, CPI, and the ratio of exports. The models without them in Table 2 show that the increase in unskilled immigrants, and the medium and the highly skilled in some models will enhance the expenditure, approving fixed effects. On the contrary, while Table 4 adopts most of the fixed effects model, other than that of total expenditure, it indicates that the medium educated immigrants have a significant effect indicating that they reduce the ratio of SOCX by around 0.7 if their level is one point higher. As for the other types of immigrants, no significant effect is shown. Considering the simultaneity in Tables 3 and 5, the results changed. In Table 3, the impact of the unskilled remained significant, but the Hausman test did not reject the null hypothesis, so there was no significant effect. In Table 5, the pooled model also supports the financial contribution of the medium and highly educated, with a significant positive coefficient of low educated immigrants, but the result did not pass the Hausman test. The result of fixed effects with IV differs depending on the model, but models 4, 6, and 7 show that highly educated immigrants reduce the expenditure.

As for the expenditure for the elderly, the results of regression with all variables were similar to that of the total expenditure while the estimate without the macroeconomic terms was slightly different. In Table 7, fixed effects were also recommended by the F test and the models showed that the unskilled had negative values. In Table 9, the regression also supported fixed effects. Two out of three models with medium educated immigrants were significant, but the absolute values of the coefficient were slightly smaller than those in Table 4 by 0.25. In Table 8 with IV, some 2SLS models had some consistent values of immigration, but they were not significant. As for the Panel IV estimation, the highly skilled had a positive value. The Hausman test of all models in Table 10 indicates that OLS had consistency. FE with IV showed again that highly educated foreigners negatively affected the elderly social expenditure.

Finally, the significant effects in the estimation for total social expenditure and the elderly held in the regression with health as well. The results of the regressions with social expenditure for health are shown in Table 14 and 15. Table 5 adopts fixed effect in all patterns, but the difference from the former two was significant in lower educated immigrants. In two out of three models, they had a significant positive value of about 0.1. The medium educated were also significant with negative values of 0.2. In Table 6, although the consistency of 2SLS could not be found even with values following the result of Table 5, the fixed effects model showed the contribution of the highly educated to health expenditure.

2.5. Discussion

Organizing these effects of immigrant educational levels on social expenditure, there are four stable results throughout the total, the elderly, and health expenditure. The first two are in the

models with macroeconomic control variables, while the second is that of multivariate regressions with all variables. The last one holds in fixed effects with instrumental variables whether the variables are in the model or not.

Firstly, there is the positive value of unskilled foreign born people in fixed effects, but this holds under the condition of excluding the effect of CPI, exchange rate, and the ratio of exports. If these are considered in Tables 4, 9, and 14, the value of the unskilled becomes insignificant. In the three tables, most of those three terms have positive coefficients, so it could partially capture their effects. The unskilled would include the majority of asylum seekers and refugees in receiving countries. The result captures the effect not only of those who immigrated for economic reasons, but also of humanitarian immigrants.

Secondly, if the variables are included in the estimation, medium educated immigrants could decrease the ratio of SOCX per GDP. There are two possible ways of causing this effect. The first interpretation is that they are net contributors to the welfare system, which indicates they pay more directly and indirectly than they use the social services and benefits. The other implication is intergenerational. The inflow of medium educated immigrants might contribute more to the welfare system than the old immigrants receive. Their effect on the receiving nation's economy exceeds that of the pensions used by the migrants who entered the host countries previously. The 1% increase in medium educated immigrants will induce less social expenditure for the elderly by 0.4% of the GDP. That is in line with the result of Razin and Sadka (1999). For the other kinds of expenditure, the highly educated may also make some contribution, but the result is not stable through the regressions.

Finally, considering the possible reverse causality of female labor, the highly skilled would contribute to the social welfare system. In the estimations with instrumental variables, the overestimate of the effect of female labor participation on SOCX can be removed as was argued previously. Suppose the recent increase in social expenditure in OECD countries is largely driven by aging, women and married women in particular will gain an incentive to work in order to compensate for the high premium or possible unsustainability of the welfare state. Women are more likely to work part time[8], and these jobs can complement the jobs of highly skilled people including immigrants. This reverse causality from the rise in SOCX to the higher promotion of highly skilled immigrants might have made fuzzy their "true" economic contribution to the welfare state in OLS estimates. Comparing the regression tables of IV with OLS, there is a clear increase in the absolute value of the highly skilled.

In spite of the possible positive and negative effects, it seems that the impacts cannot be the main solution to the problem of the current welfare system. The size of the impact is quite small

[8] Labor Force Statistics in OECD. stat https://stats.oecd.org/Index.aspx?DataSetCode=LFS_SEXAGE_I_R#

considering the historical increase in the number of immigrants. A 5% increase of SOCX per GDP has taken about 20 or 30 years in OECD countries. The appropriate interpretation would be that immigration, at least that of medium and highly skilled immigrants, should not be denied in terms of the social welfare system.

3. Conclusion

The recent trends in immigration policy are a combination of supply-led and demand-led systems. Both systems have been developed since the oil crisis because the host countries realized the need to match immigrants more closely with the needs of the domestic economy. The former systems are the labor market test and shortage list, and for the latter, the points system is used.

Our findings are summarized in three ways. Firstly, low educated immigrants including asylum seekers might be a burden on the welfare state, under the condition of disregarding some economic factors such as inflation and trade. However, since the multiple regression results including them show some of the terms are extremely significant, the results are not robust. Secondly, disregarding the possible bias of female workers, the medium skilled can contribute to the welfare state. Finally, if that bias truly exists, highly skilled immigrants will reduce social expenditure that mainly increases by aging.

For future research, we will explore the following three points. Firstly, we will study each countries' welfare system. As there are several pension systems such as the Beveridgean and Bismarckian schemes, immigrants might affect them differently (Locomba and Lagos 2010, 285). Secondly, we did not consider the large inflow of migrants from eastern countries to the EU in 1991, when the collapse of the Soviet Union occurred, and in 2000, when the EU was expanded. Since newcomers to the EU are allowed to move around the area under the Schengen Agreement, there might be unique influence to the welfare system by them. Finally, further research will include the accumulation of better data. Currently there is a trade-off between the specification and the year length. In fact, our analysis failed to consider longer periods, and thus, it could not divide old and new immigrants, who entered under different policies.

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Appendix

Table.A1 Data Souces

Data	Periods	Database	Website
Social Expenditure per GDP	1985~2014	Social Expenditure	OECD.Stat
Immigration Stock	1980~2010	The IAB brain-drain data	AIB
Total Population	1985~2014	Population Statistics	OECD.Stat
Unemployment Rate	1985~2014	Labor Force Suvery	OECD.Stat
Dependency Ratio of Population Younger Than 15	1985~2014	Population Statistics	OECD.Stat
Dependency Ratio of Population Older Than 65	1985~2014	Population Statistics	OECD.Stat
Female Labor Participation Rate	1985~2014	Labor Force Suvery	OECD.Stat
Trade Union Density	1985~2014	Trade Union	OECD.Stat
Reral Effective Exchange rate	1985~2014	OECD FACTBOOK 2015/2016	OECD.Stat
Comsumer Price Index	1985~2014	Consumer Price Indices	OECD.Stat
Share of Internatioal Exports in GDP	1985~2014	OECD FACTBOOK 2015/2016	OECD.Stat
Proportion of seats held by women in national parliaments	1990~2014	World Development Indicators	THE WORLD BANK
Length of Maternity Leave	1990~2014	Employment	OECD.Stat

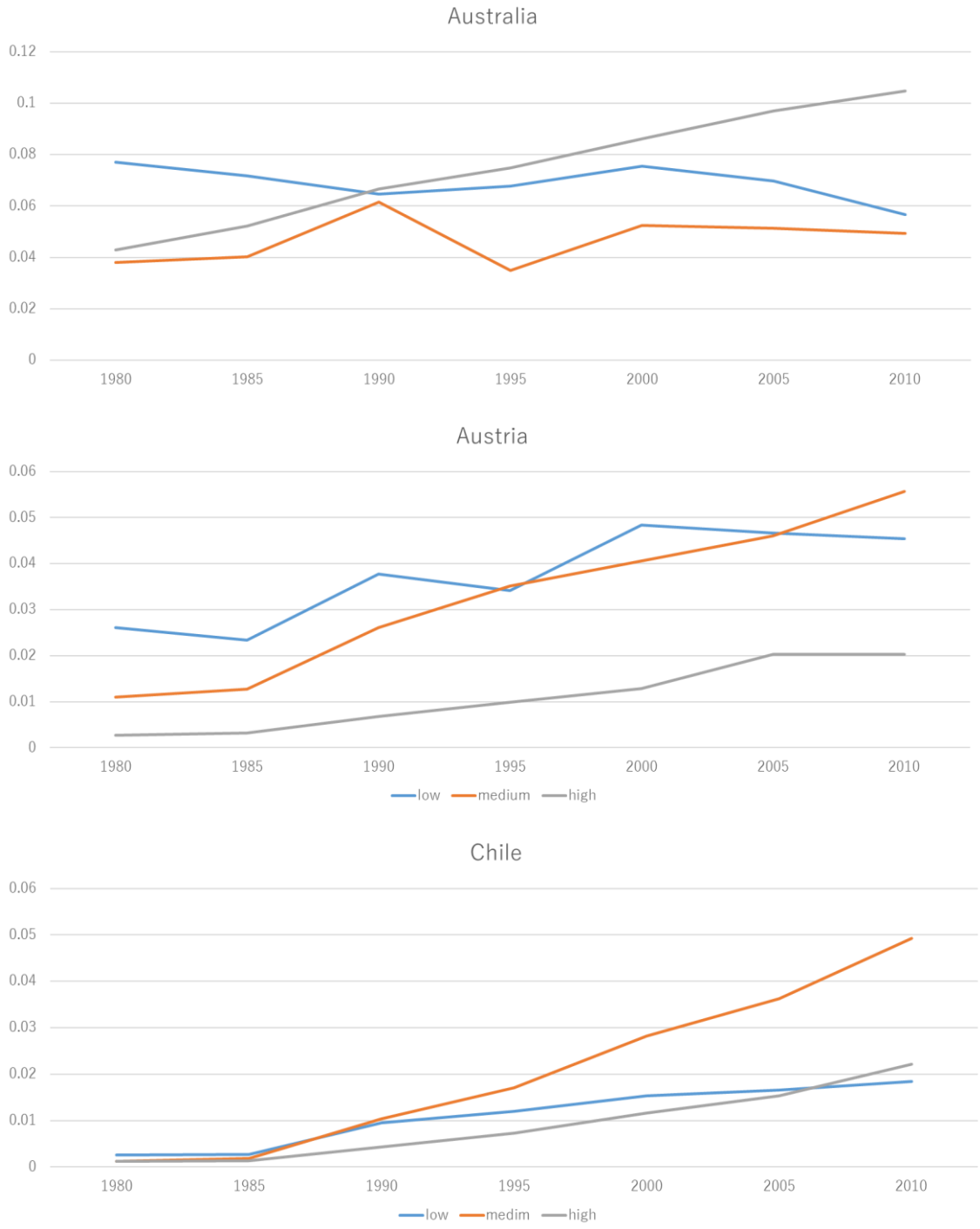
Table.A2 The definitions of variables	
Variables	Definition
socx	Total social expenditure as percentage of GDP
health	Social expenditure for heallth as percentage of GDP
oldage	Social expenditure for old age as percentage of GDP
low_immi	The share of immigrants with lower secondary, primary and no schooling, per total population
med_immi	The share of immigrants with high-school leaving certificate, per total population
high_immi	The share of immigrants with higher than high-school leaving certificate, per total population
total_immi	All immigrants including the three above
unemp_rate	Unemployment rate
pop15	Dependency ratio of people younger than 15 on all ages
pop65	Dependency ratio of people older than 65 on all ages
fem_lfp	Female labor force participation rate
trd_un	Ratio of wage and salary earners in trade unions to all earners
ex_rate	Real effective excahnge rate (base year is 2010)
cpi	Cunsumer Price Index (base year is 2010)
ex_open	International exports in goods and services per GDP
par_seats	Proportion of seats held by women in national parliaments
maleave	Lenght of maternity leave

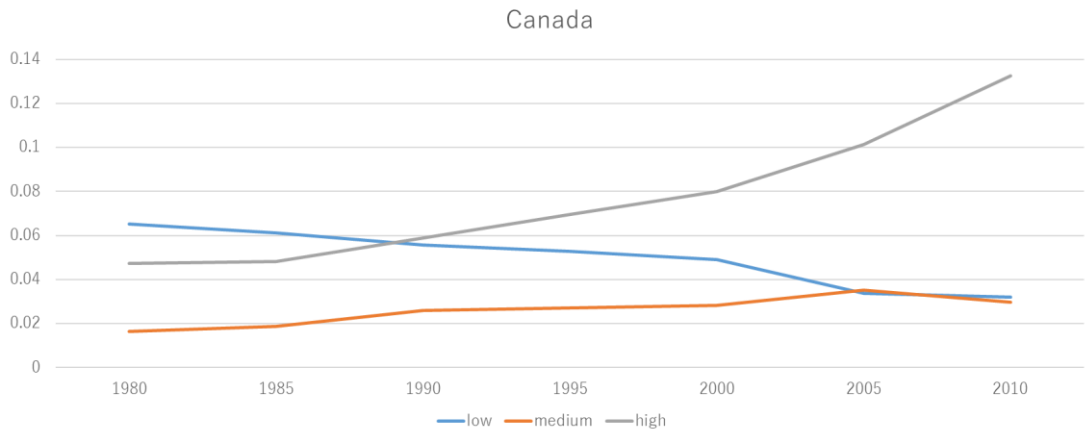
Table.A3 Descriptive statistics					
	mean	min	max	s.d.	sample
socx	0.205	0.087	0.319	0.051	139.000
health	0.054	0.024	0.084	0.013	122.000
oldage	0.066	0.024	0.119	0.023	123.000
unemployment	0.011	0.000	0.038	0.008	118.000
low_immi	0.039	0.003	0.190	0.035	140.000
med_immi	0.022	0.001	0.061	0.016	140.000
high_immi	0.023	0.001	0.132	0.024	140.000
total_immi	0.084	0.005	0.265	0.062	140.000
unemp_rate	0.077	0.000	0.029	0.043	132.000
pop15	0.190	0.000	0.011	0.033	140.000
pop65	0.145	0.000	0.021	0.029	140.000
fem_lfp	0.533	0.001	0.043	0.095	132.000
trd_un	0.352	0.077	0.831	0.206	128.000
ex_rate	0.989	0.682	1.495	0.123	140.000
cpi	0.800	0.122	1.135	0.213	140.000
ex_open	0.416	0.070	2.033	0.306	139.000
par_seats	0.210	0.000	0.453	0.139	116.000
maleave	0.291	0.087	0.607	0.115	92.000

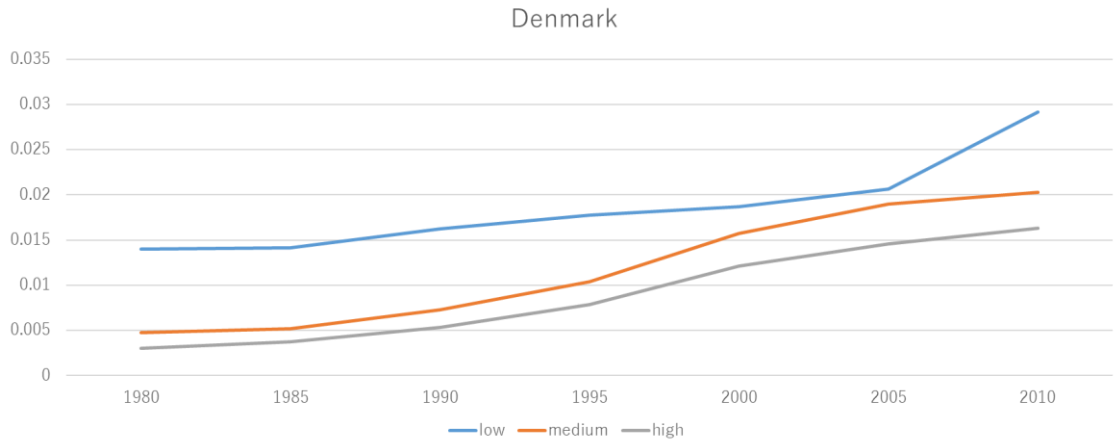
Table. A4 Correlation matrix

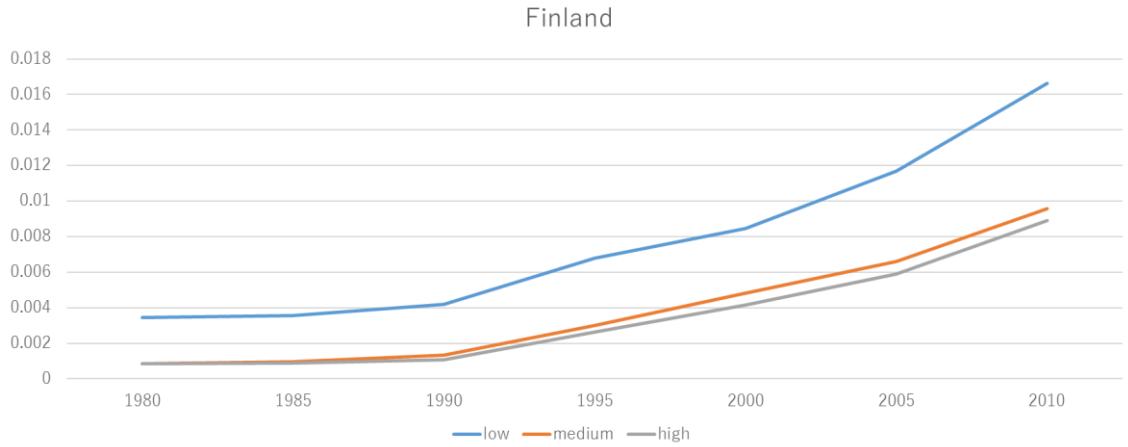
socx	family	health	oldage	unemployment	low_immi	med_immi	igh_immi	total_immi	unemp_rate	pop15	pop65	fem_lfp	trd_un	ex_rate	cpi	ex_open	par_seats	maleave	
1.000	0.651	0.631	0.742	0.477	-0.014	-0.061	-0.181	-0.093	0.149	-0.423	0.401	0.327	0.349	0.429	0.424	-0.015	0.279	-0.146	socx
	1.000	0.322	0.322	0.070	0.169	0.005	0.022	0.108	-0.302	-0.310	0.207	0.539	0.556	0.474	0.385	0.262	0.091	0.029	family
		1.000	0.339	0.198	0.165	0.135	0.329	0.259	-0.008	-0.434	0.281	0.310	-0.212	0.211	0.555	-0.044	0.331	0.191	health
			1.000	0.133	-0.110	-0.182	-0.404	-0.268	0.114	-0.293	0.304	0.033	0.179	0.231	0.082	-0.218	0.333	-0.277	oldage
				1.000	-0.159	-0.317	-0.212	-0.254	0.686	-0.090	0.123	-0.142	0.063	0.190	-0.012	-0.033	0.042	-0.165	unemployment
					1.000	0.381	0.471	0.868	-0.327	-0.063	-0.057	-0.097	-0.146	-0.062	0.223	0.702	-0.148	0.170	low_immi
						1.000	0.566	0.698	-0.142	-0.199	0.243	0.251	-0.187	-0.091	0.533	0.165	-0.014	0.210	med_immi
							1.000	0.806	-0.141	-0.099	-0.015	0.262	-0.203	-0.173	0.421	0.246	-0.083	0.192	high_immi
								1.000	-0.285	-0.126	0.023	0.109	-0.211	-0.126	0.429	0.553	-0.123	0.235	total_immi
									1.000	0.006	0.109	-0.368	-0.203	-0.019	-0.053	-0.309	0.243	-0.409	unemp_rate
										1.000	-0.802	-0.304	0.040	-0.105	-0.511	-0.084	-0.259	0.449	pop15
											1.000	0.268	-0.114	0.060	0.510	-0.016	0.313	-0.359	pop65
												1.000	0.460	0.298	0.445	-0.046	0.078	0.214	fem_lfp
													1.000	0.295	-0.154	0.104	-0.203	-0.244	trd_un
														1.000	0.138	-0.090	0.276	-0.019	ex_rate
															1.000	0.259	0.423	0.142	cpi
																1.000	-0.221	0.191	ex_open
																	1.000	-0.227	par_seats
																		1.000	maleave

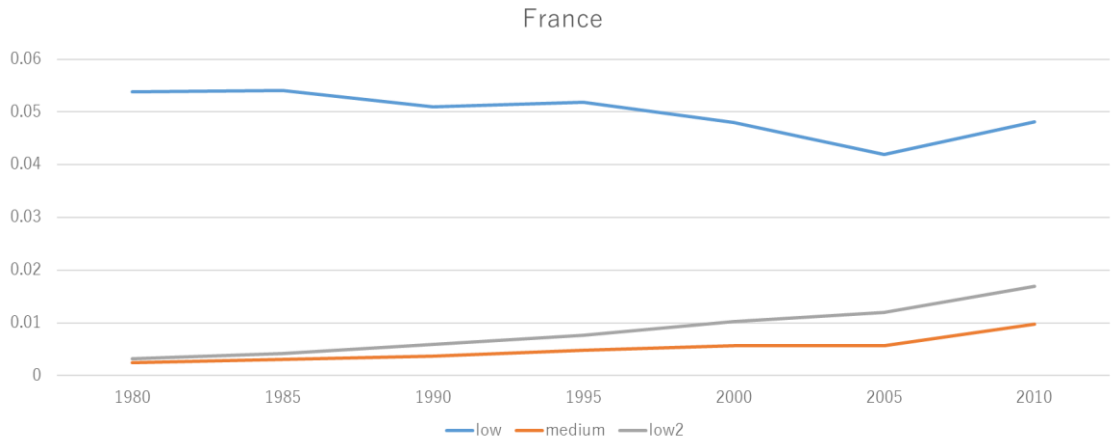
Figure A1. The ratio of foreign-born individuals aged 25 years and older to the total population in the sample OECD countries

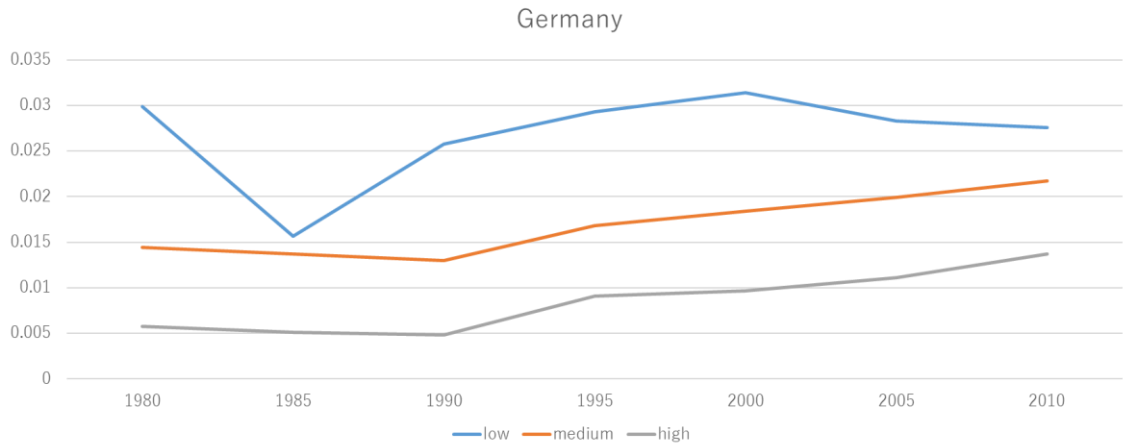


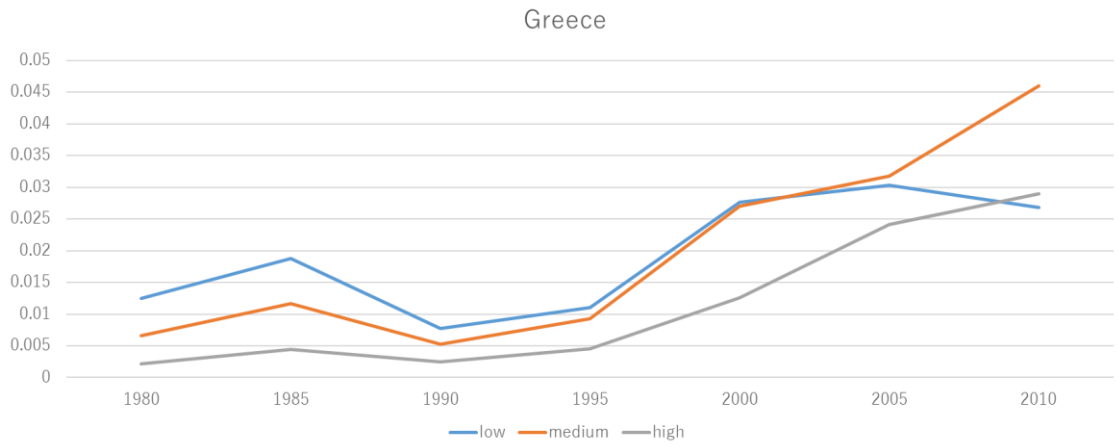

Canada
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
1980
1985
1990
1995
2000
2005
2010
low
medium
high

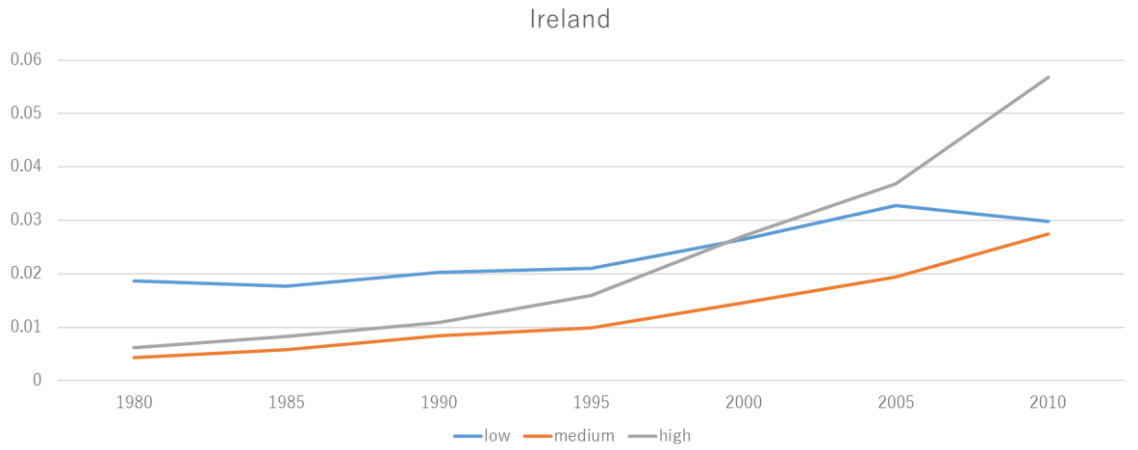

Denmark
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
1980
1985
1990
1995
2000
2005
2010
low
medium
high

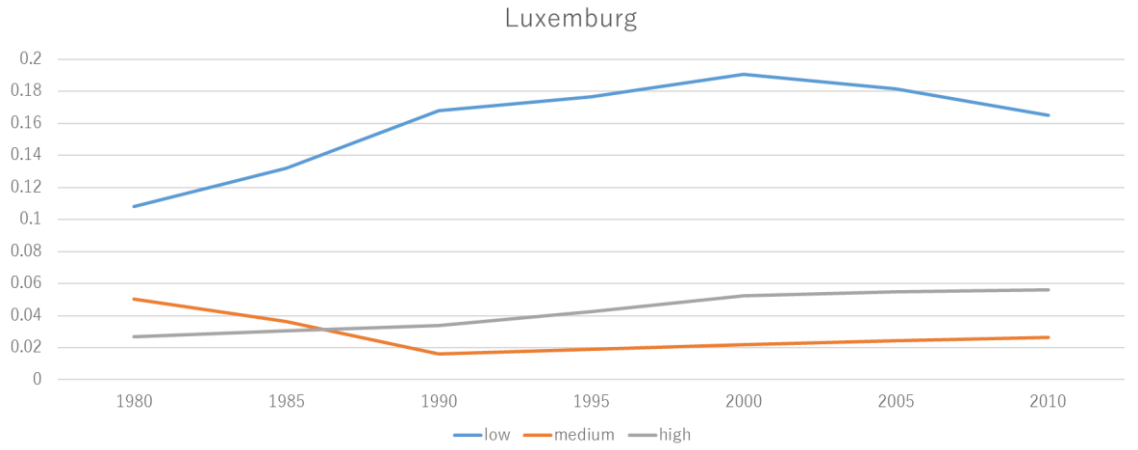

Finland
0.018
0.016
0.014
0.012
0.01
0.008
0.006
0.004
0.002
0
1980
1985
1990
1995
2000
2005
2010
low
medium
high

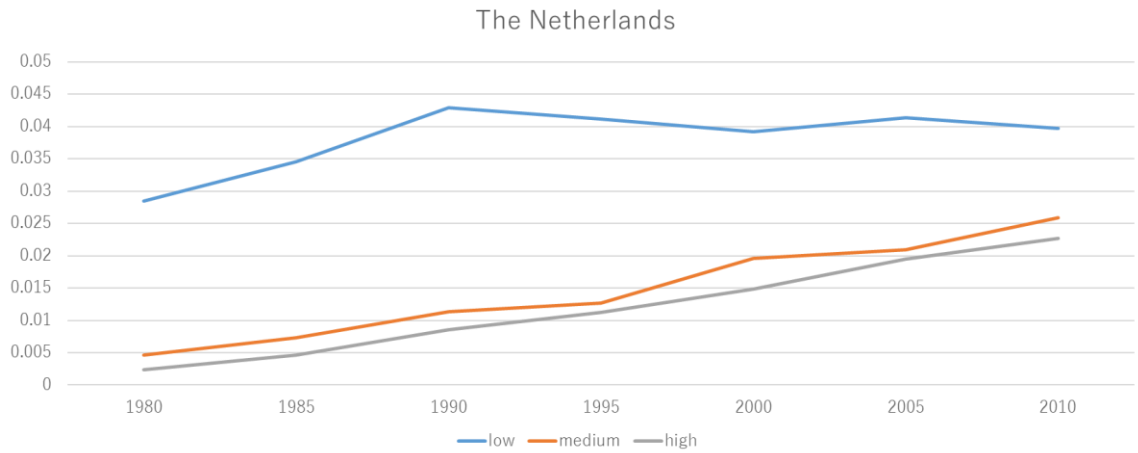

France
0.06
0.05
0.04
0.03
0.02
0.01
0
1980
1985
1990
1995
2000
2005
2010
low
medium
low2


Germany
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
1980
1985
1990
1995
2000
2005
2010
low
medium
high


Greece
0.05
0.045
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
1980
1985
1990
1995
2000
2005
2010
low
medium
high


Ireland
0.06
0.05
0.04
0.03
0.02
0.01
0
1980
1985
1990
1995
2000
2005
2010
low
medium
high


Luxemburg
0.2
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
1980
1985
1990
1995
2000
2005
2010
low
medium
high


The Netherlands
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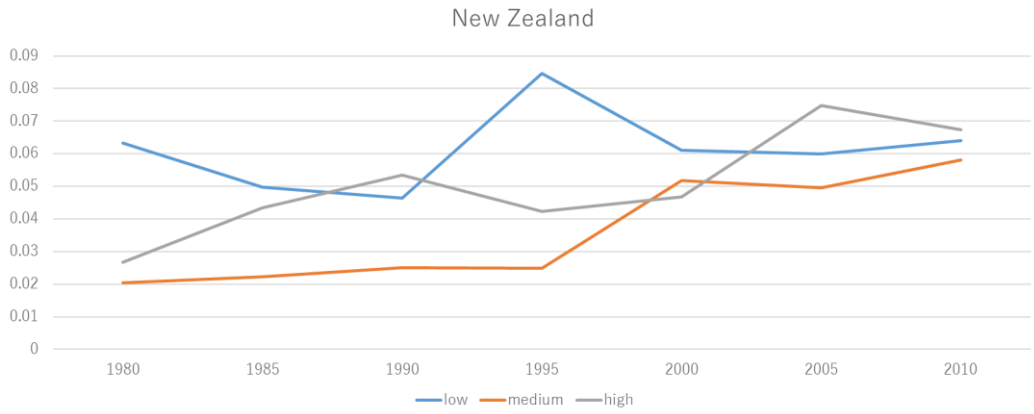
0.045
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
1980
1985
1990
1995
2000
2005
2010
low
medium
high


New Zealand
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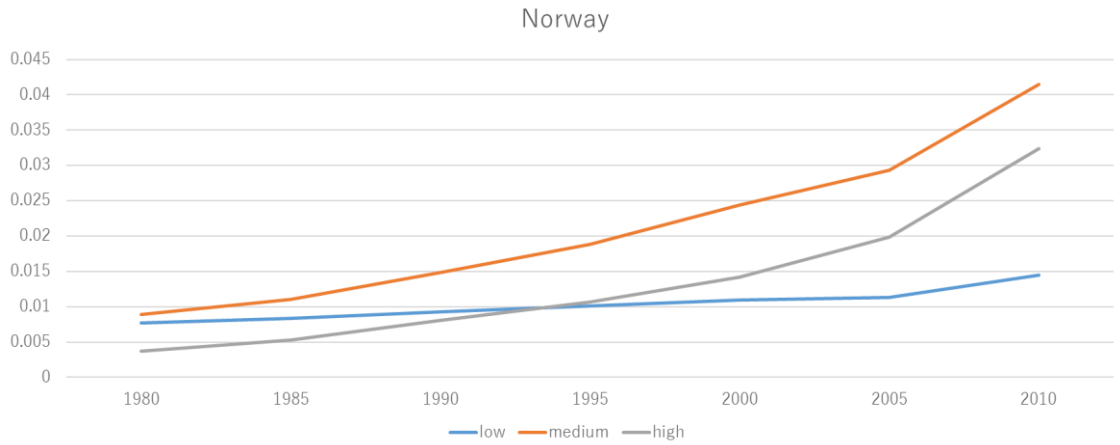
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
1980
1985
1990
1995
2000
2005
2010
low
medium
high


Norway
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0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
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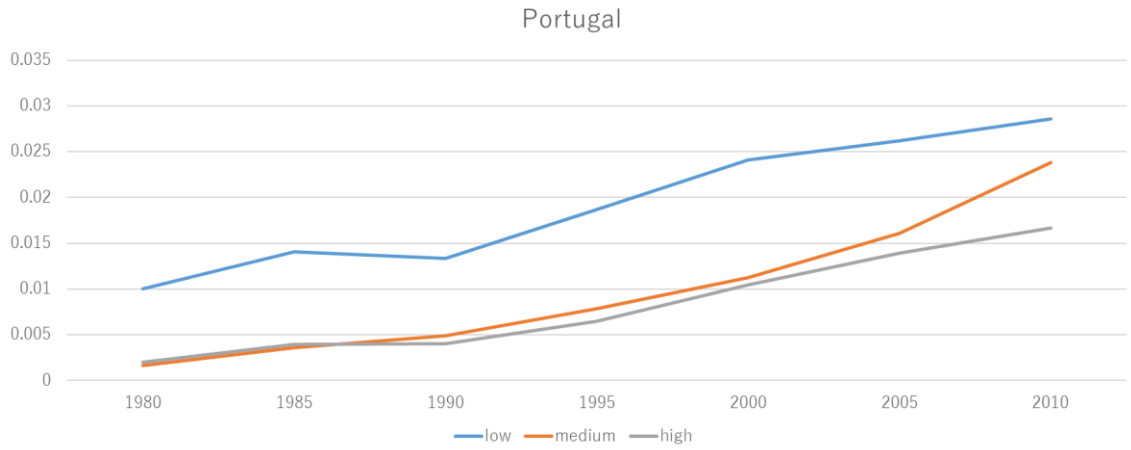
1985
1990
1995
2000
2005
2010
low
medium
high


Portugal
0.035
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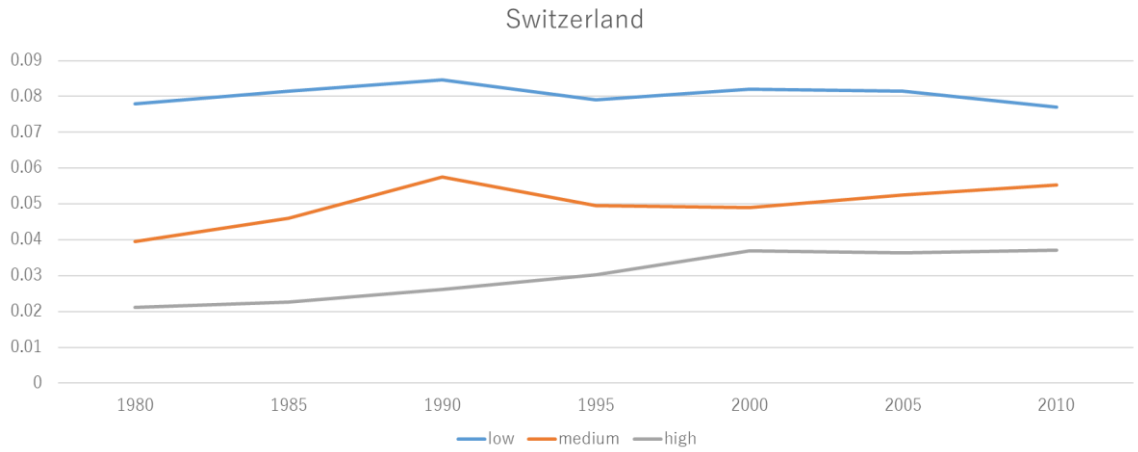
0.025
0.02
0.015
0.01
0.005
0
1980
1985
1990
1995
2000
2005
2010
low
medium
high


Switzerland
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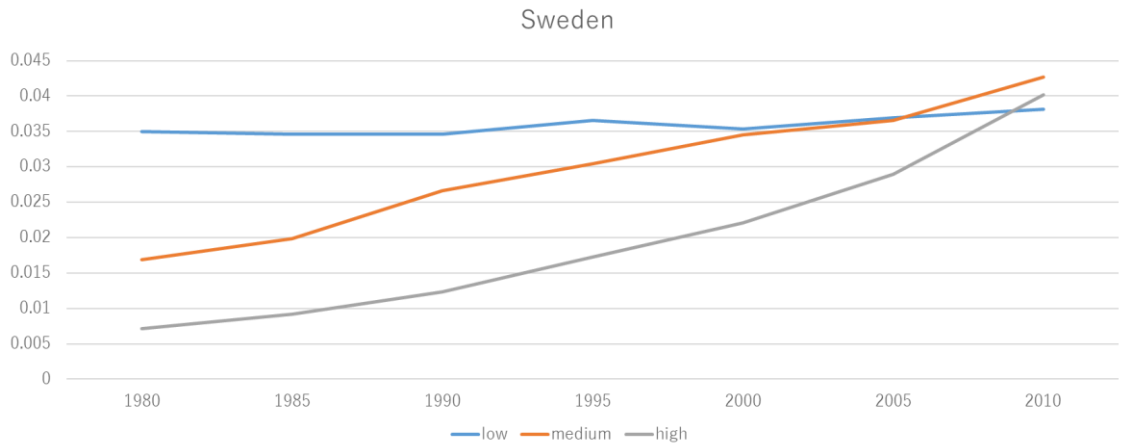
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
1980
1985
1990
1995
2000
2005
2010
low
medium
high


Sweden
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0.04
0.035
0.03
0.025
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0.01
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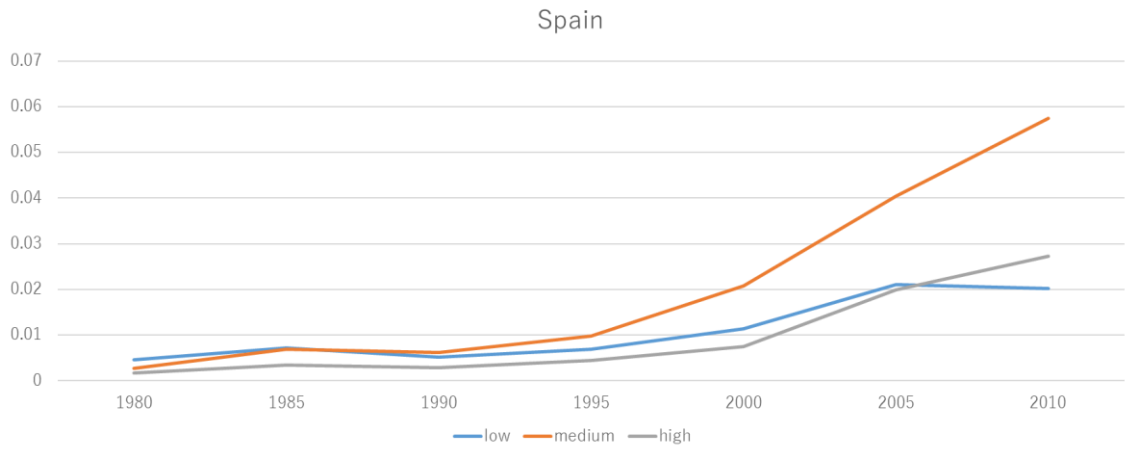
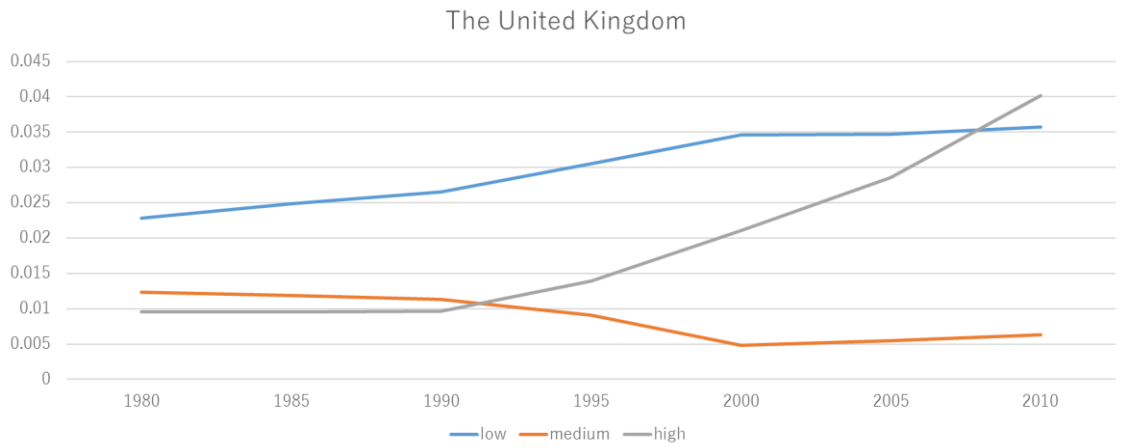
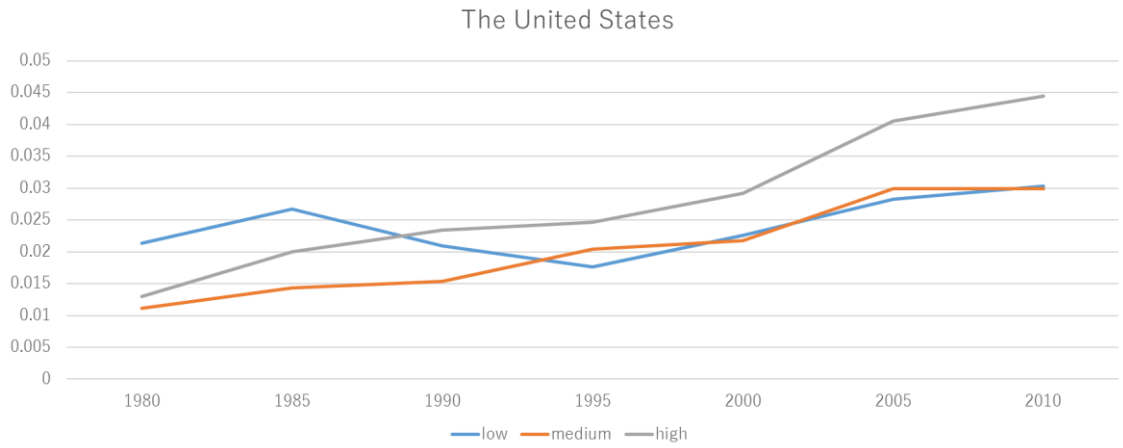
1980
1985
1990
1995
2000
2005
2010
low
medium
high


Spain
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
1980
1985
1990
1995
2000
2005
2010
low
medium
high





Source: Brücker et al. (2013) and OECD.Stat