

Youth Essay

Inverting the pyramid: addressing working-age depopulation in the European Union

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Bruegel Essay Competition 2022

The Bruegel essay competition called for evidence-based submissions targeted at policymakers and opinion makers on the question: *“What should be a priority of the European Union’s economic policy agenda in the coming years?”*

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Abstract

The European Union (EU) has been vital to the fostering of European integration, in particular through the creation of a single internal market. In many ways, EU states share a common workforce. However, the EU's aging population creates a serious threat to the sustainability of this workforce, making it weaker. The rising median age of the population is attributed to low fertility rates and increased life expectancy (among other important factors). A greying population constitutes a significant drain on economic growth. Many developed countries are experiencing the consequences of this through declining working-age populations, increasing healthcare costs and higher pension pay-outs. There is more pressure on the labour force to provide for a growing non-working population.

This essay explores the causes of an aging population and proposes policies that attempt to sustainably increase the number of births while not reducing the number of women in the workforce. Schemes to address brain drain in the EU and rising labour gaps in key sectors are also proposed. Data is taken from various EU and Organisation for Economic Co-operation and Development (OECD) reports that have analysed demographic changes dating back to 2003, among other sources.

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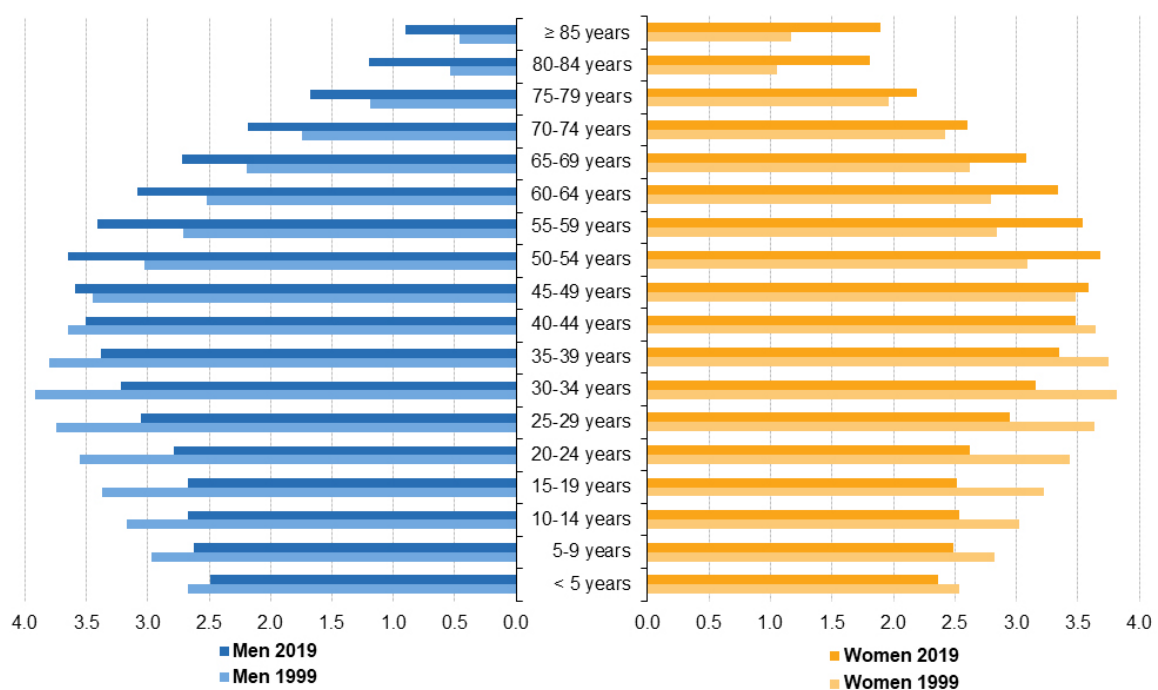
1 The demographics problem

1.1 The dependency ratio

The working-age population of EU countries is decreasing as their populations age. In 2019, there were around two working-age people (15-64 years) for every younger or older person who was likely to rely on them (Kiss, 2021) (Figure 1).

The dependency ratio quantifies the size of the working-age population compared to the size of the non-working age, or dependent, population. The dependency ratio hypothesis holds that the revenue generated by the working-age population supports those who are economically dependent, such as children and the elderly (May, 2015).

Figure 1: EU population structure, 1999 and 2019



Source: Eurostat. See [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Being young in Europe today - demographic trends](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Being_young_in_Europe_today_-_demographic_trends).

According to Eurostat, in 2100, the EU's old-age dependency ratio is expected to be 57 percent, nearly double that of 2019 (31 percent). This means that for every person aged 65 and over, there will be

fewer than two people of working age. The expected increase in the old-age dependency ratio is consistent with the previous decade's pattern (26 percent in 2009)¹.

Rates will be highest in Poland (63 percent), Italy, Malta and Finland (all 62 percent). At the moment, the highest rates are in Italy (37 percent), Finland (36.8 percent) and Greece (35.6 percent).

The dependency ratio is because of the main population trends: a greying population and a weak workforce.

1.2 The greying population

The usual pattern of labour-force growth has not changed and continues at a moderate pace. The young-age dependency ratio will rise somewhat, climbing by 1.9 percentage points from 23.5 percent in 2019 to 25.4 percent by 2100. However, the old-age dependency ratio is expected to rise rapidly until 2045, indicating the ongoing retirement process among the baby-boomers and later age groups.

The elderly demographic is the most concerning. Because of higher life expectancy and an average retirement age of 65, the European Union's older population is creating pressure in the economy through healthcare costs, pensions, assisted living and other government subsidies. The proportion of the total population of EU countries aged 65 and over is expected to rise from 20.3 percent (90.5 million) at the start of 2019 to 31.3 percent (130.2 million) by 2100. The proportion of senior people is thus expected to climb by 11.0 percentage points, with an additional 39.7 million older people by 2100. The total EU population is expected to decline by 2100, making this is the only major demographic age group that is expected to rise, both in relative and absolute terms, suggesting the persistence of population aging.

All EU countries will be affected. Even the very elderly (aged 80 and up) population of the EU is expected to more than double in absolute and relative terms, from 26.0 million in 2019 (5.8 percent) to 60.8 million (14.6 percent) in 2100².

As a result, the faster rise in the older population relative to the working age group will produce an unsustainable dependency ratio. The labour force will be simply unable to support the number of citizens who are considered dependents, with many consequences.

¹ See Eurostat, 'Old-age dependency ratio increasing in the EU', 13 July 2020, <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20200713-1>.

² Ibid.

First, there will be increased demand for health and social care. Older people are more susceptible to poor health and the consequent diseases. Europe's health services will become more and more overburdened as demand for them rises with the aging population. This will leave governments no choice but to allocate more spending to healthcare. Projections for Europe made in 2009 showed that healthcare expenditures were expected to increase on average annually at a rate of 5 percent to 6 percent, with most of this attributed to increasing ageing (Safilidou-Rothchild, 2009). The European Commission's *2021 Aging Report* confirmed that the average member state will see an increase in care costs (as a proportion of GDP per capita) (European Commission, 2020, p.121). Healthcare currently accounts for an average of 10 percent of total GDP³, which is double the amount spent on education (5 percent). This also poses a challenge for economies in that as spending increases it should be ensured that healthcare outcomes improve. A shrinking workforce will make this more difficult.

Moreover, the rising older population must be balanced by the effort and input of the labour force. However, as already mentioned this becomes less and less sustainable. Thus, the fiscal costs associated with the ageing population start to become more noticeable. The *2021 Aging Report* (European Commission, 2020) outlined the fiscal consequences of an ageing population. The comprehensive financial predictions for government expenditure on pensions, healthcare, long-term care and education are expected to flow into the EU's overall economic policy coordination (the so-called semester programme). According to the analysis, demographic changes will lead to drastically different sources of GDP growth in the long run, with growth relying on productivity gains. In almost all EU nations, the labour contribution will not sustain potential growth. The entire cost of ageing in 2019 was already 24 percent of GDP⁴ (ICAEW Insights, 2021).

1.3 A struggling labour sector

The ageing society is only part of the problem. Although the increase in the older population raises the dependency ratio, this problem is reinforced by various factors that are shrinking the working-age group.

The young age population is expected to shrink slightly due to fewer births. This narrowing process is known as 'ageing at the bottom' (of the population pyramid). According to EU projections, the working-

³ Eurostat, 'Healthcare expenditure across the EU: 10% of GDP', 2 December 2020, <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20201202-1>.

⁴ ICAEW, 'EU considers impact of ageing population on COVID-19 recovery plans', ICAEW Insights, 24 June 2021, <https://www.icaew.com/insights/viewpoints-on-the-news/2021/jun-2021/eu-considers-impact-of-ageing-population-on-covid19-recovery-plans>.

age population is expected to shrink significantly between 2019 and 2100, increasing the burden on those of working age to support the dependent population. This is caused by two main factors.

The proportion of children is expected to reduce in both relative and absolute terms, from 15.2 percent (67.8 million) at the start of 2019 to 13.9 percent (58.0 million) by 2100, with a low of 13.6 percent between 2035 and 2045⁵.

Several factors contribute to low fertility rates. For starters, cultural norms, economic patterns and life cycles have shifted profoundly, reshaping conventional gender roles. European women study for longer periods and are more likely to be employed. Like the higher life expectancy factor, this is a success story. It shows how women have overcome societal pressure to have children before they even had the chance to enter the labour market. Moreover, more women in the labour market translates to a larger workforce, which is why policies to raise low fertility rates, although highly emphasised in discussions on how to rebalance population pyramids, are long-term solutions, and could be highly unsustainable if mismanaged (May, 2015).

Finally, as mentioned, these incentives currently have a limited effect because a factor that affects the full transition from minor/student into the workforce is being ignored.

Emigration or migration has a significant influence on population change. Many young individuals leave their hometowns or nations seeking educational or employment possibilities. Consequently, while certain places thrive because of the influx of younger people, others lag behind. In the EU's case, this creates an unbalanced equilibrium in which all nations (both sending and receiving areas) might suffer negative consequences. It is therefore a significant contributor to Europe's depopulation.

Brain circulation is a region's continual and simultaneous acquisition and loss of skilled workers/students (Committee of the Regions, 2018). In the EU, this occurs more in many of the EU's biggest economic powers. Germany and France are among the countries with highest number of natural citizens (defined as citizens who were born in that country) residing in another member state. They are only surpassed by Romania, Poland and (in France's case) Italy (Sommarribas and Nienaber, 2021).

The negative implications for sending regions range from lower human capital stock, labour/skills scarcity, restricted capacity to innovate and adopt more modern technologies, labour market

⁵ Eurostat, 'World Population Day: Population trends up to 2100', 11 July 2020, <https://ec.europa.eu/eurostat/en/web/products-eurostat-news/-/EDN-20200711-1>.

adjustments (eg salary reduction), fiscal repercussions (eg tax income reduction), market size decline (eg consumption reduction), reduced economic growth, reduced productivity, higher prices of public goods and loss of investment in human capital creation (Committee of the Regions, 2018).

1.4 Impact of Brexit

The COVID-19 epidemic and Brexit have resulted in a drop in the overall number of migrants within the EU for the first time since 2011.

Brain drain is still a significant factor contributing to the depopulation of Europe now that the United Kingdom is no longer part of the statistics concerning the EU labour market.

Although students are now more likely to immigrate to Germany or the Netherlands for study, the UK still hosts large numbers of EU-born citizens. In 2019 (the most recent year for which data is available), 48 percent of EU residents travelling to the UK for at least a year cited employment as the primary motivation for their move. Most of those job movers (65 percent) reported arriving to start a specific job rather than looking for jobs. By 2020, the EU-born were expected to account for 5 percent of the total UK population of 66 million. EU-born migrants accounted for 37 percent of the UK's migrant population in 2020, up from 28 percent in 2004 (Sumption and Walsh, 2022).

1.5 Impact of COVID-19

The changes brought about by the COVID-19 epidemic and Brexit, as well as the large number of returning migrants, have underlined both the critical role of migrants in EU economy and the transitory character of migration

The coronavirus (COVID-19) pandemic has caused big changes in the public sector and has had a significant impact on public budgets across Europe. The EU's post-pandemic recovery package, which includes €750 billion in loans and grants to encourage national reforms and investments, provides an essential opportunity to address the consequences of an aging population⁶.

The EU population fell marginally from 447.3 million to 447.0 million in 2020, after a lengthy period of expansion driven by positive net migration. This period of negative natural change (ie more deaths than births) outweighed positive net migration, most likely because of the COVID-19 pandemic. In the EU, there were 534,000 more deaths in 2020 than in 2019, 550,000 higher than the yearly average

⁶ See <https://migration-demography-tools.jrc.ec.europa.eu/atlas-demography/stories/AoD/2/S2.3>.

from 2016 to 2019. The pandemic led to a severe peak in deaths in comparison to live births, which has worsened the state of the EU labour force. Although most deaths were of older citizens, it has not changed the overwhelming weight older populations still have over the working sector, especially since the pandemic's death toll outweighed net migration significantly, adding further to direct depopulation. The natural change in population [-1.1 million] was greater than net migration and statistical adjustment [+0.8 million], resulting in a population drop of -0.3 million. In addition, net migration dropped in 2020 compared to 2019⁷.

Now that the pandemic has relented, it is expected that EU population pyramids will continue to change into inverted pyramids in the coming decades, unless appropriate action is taken.

2 Innovative solutions

Throughout this essay, I have outlined a growing concern for EU policymakers, but which has prompted little to no proposals for active solutions. In this final section I outline a series of policy proposals, that I am confident could tackle this threat to Europe's economy.

2.1 Growing the next generation sustainably

- **Tax benefits for families (personal income tax)**

Personal income tax is decided nationally by each EU country. Although the EU does not have the authority to require tax breaks or exemptions to be applied in each member state, it can propose a plan to do so.

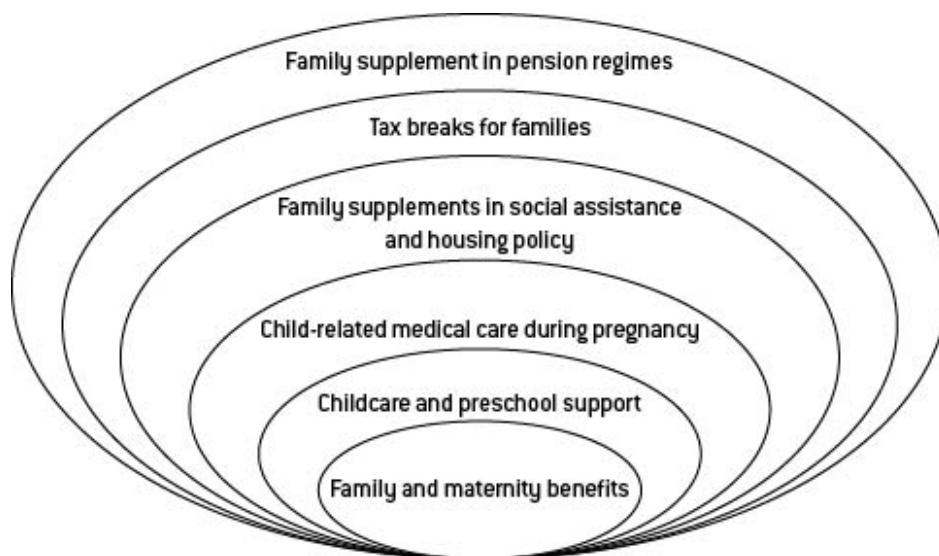
Studies have found a positive correlation between targeted exemptions from personal income tax and fertility rates (eg Whittington, 1992). Fundamental family behaviours such as fertility are connected to economic factors such as individual and household incomes. It is also well proven that individuals respond to economic incentives, in this case tax breaks. As a result, a tax incentive for reproduction may influence the observed fertility behaviour. The study in Whittington (1992) was conducted in 1992 in the United States following the 1986 Tax Reform Act. It found that tax exemptions will reduce the cost of an additional child. It is thought that children offer benefits to their parents. The usual demand model for children is constructed as a utility maximisation issue, though with many limitations. Thus, the cost of a child is determined by the cost of the child's inputs. The dependent tax

⁷ Eurostat, 'Population and population change statistics', 8 July 2022, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Population_and_population_change_statistics#EU_population_shows_a_slight_decrease_in_2020.

exemption directly reduces the expense of having a child in comparison to other consumer products. In theory, this consequence will have a beneficial impact on fertility (Whittington, 1992).

Current European policies that aim to increase fertility rates are concerned with reducing or improving the core circles of family policies. This circle is depicted in an EU report from 2009 on the cost of raising children. As it can be seen in Figure 2, tax breaks are nowhere near the core centre of policy aims. This is a problem; many EU countries focus on short-term solutions to provide fertility incentives, such as lowering the cost of prenatal care or childcare services up to preschool. However, the cost of raising children continues over a much longer period. Tax breaks place less pressure on a country's economy and lower the cost of children in a more sustainable way. I am not trying to argue that current policies should be removed, but that perhaps there are policies that could be implemented that would help women and families consider increasing their families, without leading to economic difficulties (Letablier *et al*, 2009).

Figure 2: The different circles of family policy according to the EU



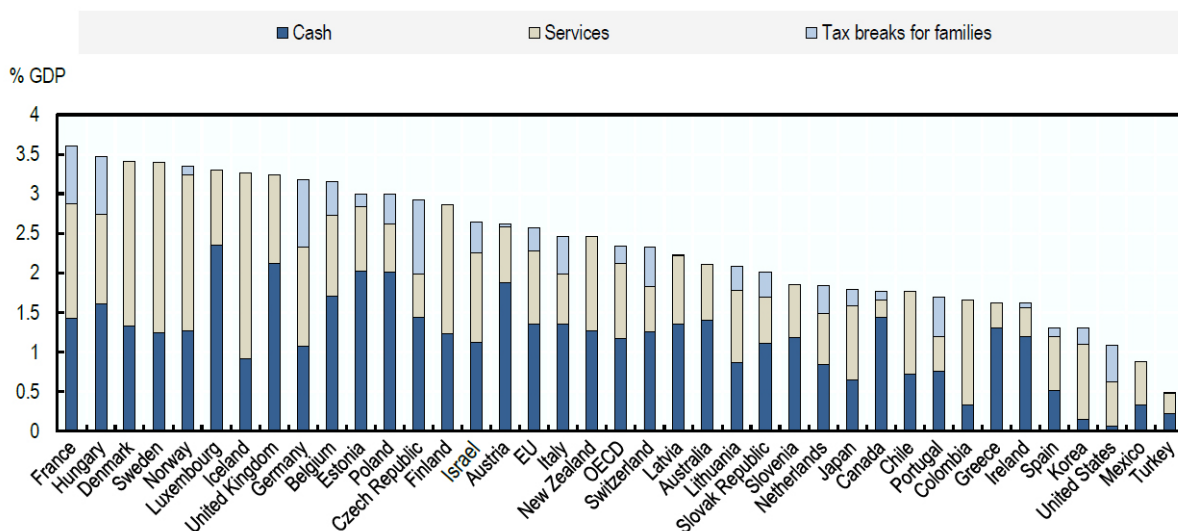
Source: From Letablier *et al* (2009).

This brings me to another point on current measures, which do not take into consideration the role of women. The share of women in the labour force cannot and should not by any means be reduced. Women are vital to the continued sustainability of the workforce, thus policies should not make women choose between work and family. Policy measures that provide short-term economic breaks for childbearing will result in a significant drop in women in the labour force, and in families with increased financial trouble. Many such policies have been discontinued in Europe. For example, Spain originally suggested hefty rewards for new births but had to abandon them because of financial constraints.

Romania became a test case when it suppressed abortion to raise birth rates, but the effects faded quickly, and the policy resulted in higher maternal death rates, primarily due to clandestine abortions (May, 2015).

Some EU nations offer child-related tax advantages or credits to families based on their gross income. In terms of income tax, there are significant variations across European nations. Denmark, Finland and Sweden, do not include children in their fiscal systems. The OECD discovered that tax advantages may amount to as little as 0.4 percent to 1 percent of GDP. Figure 3 shows the data across several EU nations and other countries for contrast. As can be seen, government expenditure on services and cash transfers is significantly larger than on tax breaks. However, as we have seen tax breaks are proven to be more sustainable in creating cost-efficient measures that increase the size of families.

Figure 3: Public spending on family benefits in cash, services and tax measures, % of GDP, 2017



Source: OECD Social Expenditure Database, <http://www.oecd.org/social/expenditure.htm>.

Table 1 provides a better understanding of the policy this essay proposes. It is composed of seven columns, containing information from 22 of the 27 EU countries (information on Bulgaria, Croatia, Cyprus, Malta and Romania was lacking). However, the data is only a means to show an estimation of how much the tax deduction would cost per country, per model. Before I explain the three models proposed in this policy, I will expand on the logic of the mathematics. The second column has the values, to the nearest million, of total revenues from taxes on personal income and profits (OECD, 2021). In the second column, I input the values for the percentage of population aged 25-34. I calculated this age group using population pyramids from each country from 2019. These two sets of values were researched so that I could calculate the percentage of total tax revenue for income and

profit these groups paid the government. This of course is an estimate, as I am not able to dissect the unemployment rate from this age structure.

Table 1: Estimated costs of Model 1, 2 and 3 of tax exemption policy, € millions]

	Total tax revenue on income and profits in € millions (2019)	Population ages 25-34 (% of total population, 2019)	Amount in € millions age cohort (25-34) paid in income tax in 2019 (est. to nearest whole value)	Model 1 (estimated to the nearest decimal) (€ millions)	Model 2 (estimated to the nearest decimal) (€ millions)	Model 3 (estimated to the nearest decimal) (€ millions)
Austria	38,239	13.70	5,239	104.8	131.0	183.4
Belgium	53,997	12.70	6,858	137.2	171.4	240.0
Czechia	10,367.91*	12.90	1,337	26.7	33.4	46.8
Denmark	76,490.86**	12.80	9,791	195.8	244.8	342.7
Estonia	1,532	14.4	221	4.4	5.5	7.7
Finland	29,401	12.7	3,734	74.7	93.3	130.7
France	227,806	11.9	27,109	542.2	677.7	948.8
Germany	367,322	12.3	45,181	903.6	1129.5	1,581.3
Greece	10,855	11.1	1,205	24.1	30.1	42.2
Hungary	6,416.63***	12.9	828	16.6	20.7	29.0
Ireland	23,680	12.2	2,889	57.8	72.2	101.1
Italy	196,135	10.9	21,379	427.6	534.5	748.3
Latvia	1,978	14	277	5.5	6.9	9.7
Lithuania	3,529	13.5	476	9.5	11.9	16.7
Luxembourg	5,917	15	888	17.8	22.2	31.1
Netherlands	68,811	12.6	8,670	173.4	216.8	303.5
Poland	121,755	14.5	17,654	353.1	441.4	617.9
Portugal	13,580	10.9	1,480	29.6	37.0	51.8
Slovakia	3,535	14.5	513	10.3	12.8	17.9
Slovenia	2,545	12.2	310	6.2	7.8	10.9
Spain	97,499	10.9	10,627	212.5	265.7	372.0
Sweden	52,569.26****	14.1	7,412	148.2	185.3	259.4
Total	1,413,960.7		174,077.5	3,481.6	4,351.9	6,092.7

Notes: * Originally valued at 569,048 million DKK (converted to euro value as of 24 May 2022); ** Originally valued at 2,457,567 million HUF (converted to euro value as of 24 May 2022); *** Originally valued at 255,398 million CZK (converted to euro value as of 24 May 2022); **** Originally valued at 550,584 million SEK (converted to euro value as of 24 May 2022).

Model 1 calculates the total value for a tax exemption of 2 percent. Model 1 would correspond to individuals with one dependent. Model 2 calculates the total value for a tax exemption of 2.5 percent. Which would be applied to individuals with 2 children. Model 3 applies a tax exemption of 3.5 percent and would be applied to individuals with 3 or more dependents.

The models proposed give an idea of the kind of tax exemption that could be applied. However, these values could be adjusted depending on each member state's will and consent. There is a cap at three children for two main reasons. First, bigger or consequent discounts could create a deficit, in which any additional children past three would cost more to both the government and the parents than their future input and contribution to the economy and country. Second, not establishing a clear limit could cause undesirable consequences by promoting fertility rates at unsustainable levels. For example, global overcrowding is a prevalent and concerning issue, the consequences of which can be depicted clearly in the context of Malthus's basic theory of population growth. The EU has a current birth rate of 1.5 births per woman, less in specific countries, which we should aim to raise towards 2.5, in order to work towards reducing the dependency ratio in the decades to come. The fertility rate cannot be much pushed too much, otherwise an uncontrolled boom of babies will become a financial and social problem for many countries, ranging between overcrowding to a significant drop in females in the labour sector.

I believe this policy however could generate some incentive to increase the fertility rate. It would be more economically suitable for countries, as the money invested in these incentives would be spread out over various years. This is more desirable than short-term investments (like Spain's one-off payment), as it calculates a more fixed and controlled value of investment, while, for example, Spain's solution could be used and maybe abused by individuals without any limit every year. Moreover, in that it promotes long-term sustainable investment for governments, it is a constant financial aid for parents. Table 2 shows calculations for the amount of money that 2 percent, 2.5 percent and 3 percent of each country's median annual net income value would be. Of course, this isn't specific to the age group it would be targeting, but enables a rough understanding of how many euros per year individuals could save.

Table 2: Estimated individual savings from Model 1, 2 and 3 of tax exemption policy

	Population Total (2019)	Estimated number of people in age group (25-34)	Est. amount in € each citizen paid in income tax (2019)	Model 1 (€)	Model 2 (€)	Model 3 (€)
Austria	8879920	1216549	4306	86.13	107.66	150.73
Belgium	11488980	1459100	4700	94.00	117.50	164.51
Czechia	10671870	1376671	971	19.42	24.28	33.99
Denmark	5814422	744246	13156	263.11	328.89	460.45
Estonia	1326855	191067	1157	23.13	28.92	40.48
Finland	5521606	701244	5325	106.50	133.12	186.37
France	67248926	8002622	3388	67.75	84.69	118.56
Germany	83092962	10220434	4421	88.41	110.52	154.72
Greece	10721582	1190096	1013	20.25	25.31	35.44
Hungary	9771141	1260477	657	13.14	16.42	22.99
Ireland	4934340	601989	4799	95.98	119.98	167.97
Italy	59729081	6510470	3284	65.68	82.09	114.93
Latvia	1913822	267935	1034	20.68	25.85	36.18
Lithuania	2794137	377208	1262	25.24	31.55	44.17
Luxembourg	620001	93000	9548	190.97	238.71	334.19
Netherlands	17344874	2185454	3967	79.34	99.18	138.85
Poland	37965475	5504994	3207	64.14	80.17	112.24
Portugal	10286263	1121203	1320	26.40	33.00	46.20
Slovakia	5454147	790851	649	12.97	16.22	22.70
Slovenia	2088385	254783	1217	24.33	30.42	42.59
Spain	47134837	5137697	2068	41.37	51.71	72.40
Sweden	10278887	1449323	5114	102.28	127.85	178.99

The values under Model 1 are calculated estimated values of the amount of money in euros a citizen in the age group 25-34 would save, per year, benefiting from the tax deduction of Model 1 (2 percent). The same goes for the values under Model 2 (2.5 percent) and Model 3 (3.5 percent). The population total values were drawn from the World Bank database. The amounts saved were calculated by first estimating the number of citizens per country aged 25-34. This was done by using the percentage values (column 3, Table 1); and population total set of values (column 2, Table 2). Then I divided previously calculated estimated amounts of euros paid in income tax by the age group citizens per country (column 4, Table 1) by the number of citizens estimated to be part of that age group per

country. This set of values can be found in column 4 of Table 2. I then used this amount to estimate how much money per year individuals benefiting from each Models 1, 2 and 3 could save, which can be found in columns 5, 6 and 7 respectively.

This amount, of course, is only an estimate, which could be varied depending on the specific year's tax revenue, but it gives an idea of the kind of savings a potential household could make each year, that could go towards raising their children, thus incentivising fertility rate growth.

- **Subsidies for public transport for big families**

The application of this policy would allow families to benefit from lower fares for public transport in their country of residence. Public transport is used by many families, especially by children and adolescents who have not yet reached adulthood and the legal age for driving in Europe. By applying a small subsidy for this amenity, and following the income effect of the demand curve, we see that, by assuming income remains constant for a typical family or household, the reduced charge for public transport will result in an increase in disposable income for that family. This allows parents to save more money, in a long-term capacity, to raise children.

Public transport in Europe is highly used, especially now there is an emphasis on the harmful carbon emissions of private transport. The demand for more affordable and sustainable options is higher than ever.

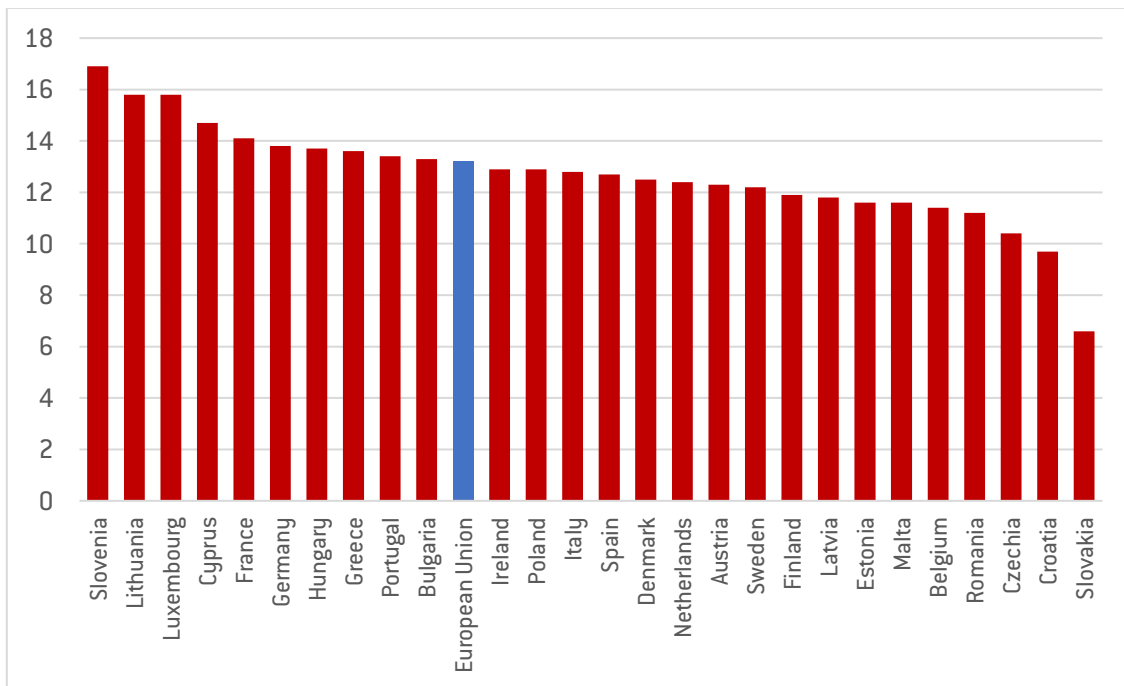
It could be argued that in practice, subsidies like these would not allow for any price elasticity of demand, meaning that a change in demand as response to a lower price might be little or non-existent. This would happen where there is already a low demand for public transport, such as little to no usage in European countries.

However, this does not seem to be the case in the EU. Public transport has been closely studied in recent years as a potential measure to lower carbon emissions for the European Green Deal outcomes. It is more and more in policymakers' interests to create a greater demand for public transport than for private transport.

In 2018, EU households spent 13.2 percent of their overall consumer expenditure on transportation. Total consumption expenditure is the total amount spent by resident households on individual products and services. This amounts to more than €1.1 trillion in total expenditure, or 7.2 percent of EU GDP, or €2,220 per EU person. This is further corroborated by Figure 4, which shows that EU

households, almost without exception, spend around 10 percent of their total expenditure on public transport. Furthermore, after housing, transportation is the EU's second largest household spending item (24.0 percent of total consumption expenditure). Food and non-alcoholic beverages come in third (12.1 percent)⁸.

Figure 4: Share of household expenditure spent on transport, 2018



Source: Eurostat; see <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20200108-1>.

These subsidies could not only promote the use of public transport, especially by members of young families, but would allow parents to reduce the amount of money they spend on transporting their children, a contributing factor to the expenditures and costs of raising a child.

It could be argued that this policy could trigger moral hazards. This could result in inefficient practices as companies could view subsidies as a form of government protection against wasteful activities. Such inefficiency boosts supply costs and diverts precious resources away from more efficient applications. Thus, companies could over-hire employees, which could lead to public transport running unused for many periods.

However, these policies propose public transportation subsidies that would target only a specific demographic, that would only grow over a significant period. Again, fertility rates need to be increased

⁸ Eurostat, 'Transport costs EU households over €1.1 trillion', 8 January 2020, <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20200108-1>.

sustainably, thus in theory, the demand for these policies would grow with its intended effect in increasing the population. Moreover, it will be important to create limit. We do not want to raise the population too much, thus, similar to tax exemptions only going up to three children, these subsidies would be specific to smaller families. Measures could thus range from family passes to reduced public transport fares, measuring the discounts per child up to three (three is the number I am recommending although this could be further revised if necessary).

Moreover, it could also be argued that the specific nature of public transport warrants positive externalities. This is followed by the Mohring Effect that explains that transit transport will become more efficient with increased demand: if 100 passengers want to travel every hour, you send two buses, one every half-hour, and the average rider only needs to wait half as long (cutting wait times and, across a network, lowering transfer times), benefiting everyone. Similarly, the greater the number of riders, the greater the spatial coverage that may be supplied (lowering entrance and egress times)⁹.

I propose these reductions on public transport fares specifically because I think it could address not only the transportation part of child costs, which is a big part of paying for raising children, but also, because it is in line with the EU's efforts to promote environmentally friendly policies. Of course, other parts of child-raising costs would be food and education.

- **Final notes on this subsection**

It is important to note that my proposed policies to raise fertility rates are aimed at providing parents the opportunity to increase their yearly disposable incomes. This allows them to save, in a long-term capacity, more money to spend on children's amenities and services. These small but very significant deductions will allow governments to incentivise fertility at a sustainable level. As we have seen in previous sections, the weaknesses in past fertility incentivising policies are embedded in the short-term effect they have: for example, Spain's payment per child. This might seem helpful, but it is not sustainable. Policies need to understand and aim for the nature of their targets. If we are to increase fertility rates, we must understand that payments for childcare work in an almost linear function. They do not cost a lot in the first years and then become cheaper year by year. These policies propose long-term effect solutions because raising a child is done at a long-term capacity. Parents need consistent help, not one-off payments, even if those have a bigger value at the beginning. These yearly

⁹ David Levinson and David King, 'Here's How The Government Should Be Subsidizing Public Transit', *Business Insider*, 22 April 2013, <https://www.businessinsider.com/the-right-way-to-subsidize-public-transit-2013-4>.

exemptions or subsidies seek to help parents raise their children sustainably throughout the needed 18 years, sometimes even more.

2.2 Addressing the brain-drain issue

- **The Young Dreamer Work Placement Scheme**

As explained in section 1.4, along with low fertility rates, students who travel internationally for better study and/or work opportunities contribute to the shortage of workers.

Without repeating the troubling statistics, this policy aims to promote a controlled and sustained flow of European migration by young workers and students throughout the European Union. Recent graduates must struggle to find work opportunities. Though this was not always the case, the COVID-19 pandemic has led to a catastrophic fall in graduate employment rates. In 2019, the EU employment rate for recent graduates stayed at 80.9 percent, barely 0.9 percentage points down from its 2008 peak. However, in 2020, the rate dropped to 78.7 percent. Employment rates for recent tertiary graduates (graduates of post-secondary education received at universities or similar) were lowest in 2014 (at 79.5 percent, 7.4 percentage points lower than in 2008), but rose to 85.0 percent in 2019, still 1.9 percentage points below than their relative peak in 2008 (at 86.9 percent), before falling to 83.7 percent in 2020¹⁰.

Yet many businesses in the EU are experiencing labour shortage and working hard to keep up with demand. This policy aims to join these two problems together to create a more efficient network scheme aimed at matching students to employability shortages in their work sectors. Much like the very innovative Erasmus programme, this scheme would promote short-term, with potential long-term stay, work placements for recently graduated EU students in other EU countries. Thus, the policy aims to promote a diverse dispersion of young workers to struggling countries with labour shortages.

For details of the policy, please refer to the table on the next page.

¹⁰ See Eurostat, 'Employment rates of recent graduates', https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Employment_rates_of_recent_graduates#Employment_rates_of_recent_graduates.

Policy name	The Young Dreamer Work Placement Scheme
Policy outcomes	<ul style="list-style-type: none"> ▪ Control migration patterns for young workers ▪ Address the issue of brain drain through the promotion of inter-European movement ▪ Boost labour in key sectors ▪ Improve rates of graduate employment and fill gaps or deficits in struggling labour areas ▪ Forge partnerships between European universities and independent business and/or work sectors as well as the relevant candidates ▪ Increase the pool of young employees and their access to the work sector ▪ Improve communication and transparency between businesses/work sectors and recent graduates through improved networking platforms
Policy outlook	<ul style="list-style-type: none"> ▪ Build a reliable database of candidates and cross match with labour deficits in desired/graduate work area ▪ Targeted towards young workers struggling to find work in their home country and/or work sector ▪ 1-3 years stay for work, with possible long-term capacity if candidate and/or business so wish and coordinate amongst themselves ▪ Work offered may range from unpaid internships to specific work positions depending on sector availability and the relevant businesses' preference ▪ Student commits to working for chosen company full time during temporary stay
Policy conditions	<ul style="list-style-type: none"> ▪ Recent graduates of a European university or that hold citizenship in one of the EU's members states ▪ Database and matching are a product of the European Union, yet coordinated with the relevant member states involved ▪ Businesses may agree to pay for candidate's moving arrangements due to the necessity to meet demand ▪ Policy aims to build safe and reliable work opportunities for young workers to dive into desired work field ▪ Policy does not discriminate against candidates based on gender, race, ethnicity, sexuality or other

2.3 Sustaining the labour market

- **Increased immigration policies**

Immigrants are frequently viewed as a danger to low-skilled labour, societal norms and even countries' cultural and religious beliefs. Nonetheless, many European nations require immigration to supplement their shrinking labour forces and keep their economies afloat.

Immigration is undoubtedly one of Europe's most contentious population policy issues since it frequently provokes worries of denationalisation. However, it had become a growing necessity to counteract population deficits, in key sectors.

This has happened in the EU before, up until the 1970s amidst an oil crisis, and it has become a necessary measure again. The EU's demographic projections predict grave scenarios if fertility remains below replacement levels. Immediate action is called for, to increase low levels of fertility and regulate migration inflows.

Regulation is the key in this policy. Immigration waves can become a threat to stability of the labour market, as well as creating other social problem such as increased tension with nationals (May, 2015).

This essay proposes the implementation of a range of short-term work visas. These would be mostly seasonal and would target low-skilled employees in sectors with labour shortages, such as manufacturing. Eurofound discovered that the most severe shortages are observed in the manufacturing, construction and services sectors in eastern Europe, where 39 percent of manufacturing enterprises and 42 percent of construction companies cited labour shortages as a factor affecting production in 2019 (Eurofound, 2021).

The success of policies like these can be seen in New Zealand's Recognized Seasonal Employer Scheme. This counteracts many unwanted consequences, such as an unrecognised overstay, uncontrolled flows of immigration and organised increase in demand. In New Zealand, this programme showed a less than 1 percent overstay average (Clemens *et al*, 2018).

A scheme like this would be coordinated by the EU in partnership with its members. It would target overseas employees looking to move to the EU on a short-term basis. A database would be compiled of the visa requests and matched with various companies' labour needs. Most manufacturing work is based on different and seasonal projects, thus the visa would be specifically limited to that period. Companies, due to shortage of labour, could be willing to pay part of the costs of travelling, increasing the participation of more immigrants.

In New Zealand, this programme was a huge success. A similar policy would be intended to encourage migrants to return on a regular basis, providing companies in Europe with a dependable, familiar and skilled workforce. Term-limited seasonal labour may also have a complementary effect that increases native output and revenue (Clemens *et al*, 2018).

Moreover, immigrants would be encouraged to go back since the euro is more valuable in less-developed states. The New Zealand programme showed that employees' family incomes increased by an average 35 percent *per capita*. The International Labour Organisation (ILO) regards the system as

an example of best practice, as it comprises a wide variety of rules to ensure that employees receive proper safeguards and are educated about them (Clemens *et al*, 2018).

The most concerning issue surrounding immigration is the increased and uncontrolled competition with nationals. However, these visas would specifically target labour shortages in key areas.

It could be argued however, that where labour shortages persist, this temporary solution would only have a short-term impact, not completely solving the problem. Thus, this essay proposes that if along with these temporary visa schemes, the EU invested in creating a digital database created to screen immigrant applicants as a way of identifying potential long-term migrant stays. An OECD report, *Towards 2035 : Making migration and integration policies future ready*, called for investment by policymakers in statistical modelling for migration management and big data. A technology like this could help countries identify young workers who could become a permanent part of their societies on a long-term basis. This screening process, though always containing a humanistic aspect (meaning that a statistical analysis should not be solely relied on), could be a solution to the shortage of labour overall. Switzerland, for example, is now exploring a big data and machine learning-based approach to enhance the match between refugee characteristics and acceptable resettlement areas, with the goal of enhancing labour market integration outcomes (OECD, 2020).

For a more detailed outlook of the policies please refer to the table below.

Policy	The EU Seasonal Worker Visa Scheme	EU Immigration Statistical Model
Policy outcomes	<ul style="list-style-type: none"> ▪ Controlled increase in labour shortage in key labour sectors ▪ Emphasis on low-skilled jobs and sectors (such as manufacturing, construction, etc.) ▪ Provide a sustained but temporary labour force to businesses struggling to keep up with demand ▪ Provide and ensure a safe, and respectable work conditions, that comply with the EU moral standard and the European Charter of Human Rights ▪ Controlled flow of immigration requests, and limit acceptances to demand of businesses, to not promote unemployment, or unwanted, illegal and/or unaware overstay of immigrants 	<ul style="list-style-type: none"> ▪ Easement of integration process by accessing potential successful integration and other desired characteristics ▪ This policy does not attempt to dehumanise immigration policy, therefore, must ensure supervision by officials in final and intermediate stages. ▪ Time-efficient real-time monitoring for obvious or highly observable security or otherwise risks to respective nation. ▪ Cost effective target interventions thereby creating proactive candidate lists ▪ Lowered risks of security threats associated with long term and increased flows of immigration ▪ Efficient matching of potential workers to labour sectors with shortage.

	<ul style="list-style-type: none"> ▪ Work in cooperation with the ambassadors and other officials of partner countries, to ensure a calm and uncomplicated temporary transition and work placement ▪ Maintain communication between parties open in allowing for company independence in contacting/interviewing potential candidates and vice versa, while respecting EU data and privacy laws 	<ul style="list-style-type: none"> ▪ Sustained and controlled migration intake that could boost the labour market effectively
Policy outlook	<ul style="list-style-type: none"> ▪ Visa scheme published and advertised in EU platforms ▪ Struggling businesses encouraged to reach out to respective country's EU ambassadors in requesting temporary job vacations. ▪ EU works as middleman in matching potential immigrant proposals to labour vacations 	<ul style="list-style-type: none"> ▪ Database would be compiled of different visa requests filled with candidate details ranging from working history to personal details. These may even include beliefs or similar if countries so wish and candidates consent to sharing. Specific details could help countries decide if integration would be harder for candidate to integrate ▪ Database could match sending counties (original country from which potential candidate departs) with destination countries that share common cultural or social features (for example, a common language). ▪ Partnership with independents businesses to create a database for labour shortage in key sectors
Policy conditions	<ul style="list-style-type: none"> ▪ Visa allows for work settlement with a maximum stay of 3-5 years, depending on each nations' and businesses' demand and need for temporary labour ▪ Visa coordinated by the respective home country's officials as well as destination country's EU and national institutions. ▪ Visa revoked in cases of identity fraud, or similar crimes. ▪ Visa-specific conditions to be set at the liberty of destination country, as long as it complied with the requirements and rights set by the EU Labour Law. 	<ul style="list-style-type: none"> ▪ Specific to young workers with maximum age of perhaps 40. This would most likely screen candidates that are looking to move to the country on a long-term basis, rather than individuals with more attachments and ▪ Visa coordinated by specific EU member state in its final stages yet must ensure it complies and provides potential immigrants with a safe work environment, as well as awards rights and privileges that comply with EU labour law and ECHR bill of rights. ▪ Visa does not discriminate against candidates with dependents

	<ul style="list-style-type: none"> ▪ Visa may be expanded or revoked according to the country's changing labour needs and may become specific to more labour sectors. ▪ Policy does not discriminate against candidates based on gender, race, ethnicity, or other 	<ul style="list-style-type: none"> ▪ Policy does not discriminate against candidates based on gender, race, ethnicity, or other
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3 Conclusion

This essay has shown how population aging in the European Union has become a significant problem threatening the sustainability of the present and future labour sector if it remains unaddressed. It has outlined policies that will effectively lower the current effects that low birth rates and labour sector deficits are imposing on the European population overall.

All these provide the opportunity for controlled augmentation in the relevant areas. This is key to the sustainability of the working sector and young age groups, as otherwise some policies could produce undesired consequences. For example, the tax exemption aims to limit the rise in birth rates by just one value on average, otherwise, if incentives are provided with short term and limited effect, women might be compelled to leave work to sustain the family at home. This would be highly counterproductive, not only for the growth of the labour sector but for the equal work opportunities the European Union aims to promote.

Current EU policies that seek to tackle the working-age depopulation of the European Union aim target older population groups. However, there should be a bigger emphasis on other groups that are struggling due to the growing elderly population – in particular, the working-age population, which is currently working to sustain the older population. Healthcare and pensions are examples of policies that rightfully support the older cohort, but policies are also needed that question how and why the population is aging and address those factors, such as identifying how to build more sustainable younger age cohorts. This essay calls for changing the population pyramid by proposing policies that aim to strengthen the lower sectors of the pyramid in the EU. At the moment, we are moving towards an inverted triangle (meaning a bigger older age group, a small working group, and a shrinking young age group). These policies aim to construct a pear shape thereby strengthening the labour sector, as well as helping build the next generation of European workers.

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