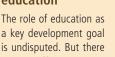
POPULATION NETWORK NEWSLETTER OTHER POPULATION NETWORK NEWSLETTER

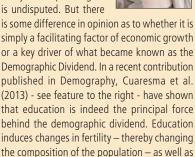
Wolfgang Lutz, Editor

No. 45, Winter 2014



Editorial: The explanatory power of education





directly affecting productivity. These results

highlight the importance of human capital investment for achieving development goals.

By shaping potential earnings capacity, education also plays an important role when considering the distribution of resources across age, as measured in the context of National Transfer Accounts (NTA). A new EU project coordinated by the Wittgenstein Centre (see p.3) will, among other things, investigate the role of public versus private institutions in supporting education. These investments in children will be important for productivity and public finances in the future.

In addition to fostering productivity at the aggregate level and positively affecting earnings potentials, education also reduces vulnerability to unforeseen environmental changes, including natural disasters. A recent special issue of *Ecology & Society* (see p.5) strongly supports this argument. Given its pivotal role in both fostering greater prosperity while mitigating loss, education should be recognized as the *sine qua non* of global development agendas and a key long-term strategic investment that must not fall victim to short-term budget consolidation.

—Alexia Fürnkranz-Prskawetz



The Demographic Dividend is an Education-triggered Dividend

A recent paper in *Demography* sheds new light on our understanding of the effects of population change on economic growth, with education rather than fertility decline being the main demographic driver.

esearch conducted over the past years by the Wittgenstein Centre (IIASA, ÖAW, WU) has suggested that higher level of educational attainment should be routinely treated as a standard demographic dimension in addition to age and sex. It has been shown to be the single most important source of observable population heterogeneity along with age and sex. Explicitly including education also changes the main message derived from the Demographic Dividend Model, which has become the dominant model for describing the effect of demographic change on economic growth.

The conventional Demographic Dividend Model views fertility decline as an exogenous trigger for an increasing proportion of the population being in the working ages, which under certain conditions (good governance, investments in education, etc.) can lead to higher productivity and faster economic growth (Model A in the chart below). The Education-triggered Dividend Model views the same empirically observed correlation between the proportion of the population in the working ages and higher productivity as resulting from the joint effect of higher educational attainment on fertility decline and also, independently, on higher productivity (Model B in the chart). The recent paper by Jesus Crespo Cuaresma, Wolfgang Lutz, and Warren Sanderson tests these two alternative views and finds support for the Education-trigged Demographic Dividend Model.

There is no doubt (and no difference between the two models in this respect) that a decrease in fertility as part of the demographic transition brings about changes in the age structure of populations which, in the short term, leads to a higher working age proportion. The conventional Demographic Dividend Model assumes that the falling proportions of children in total population that is triggered by an exogenous fertility decline (often assumed to be a consequence of family

A: Conventional Demographic Dividend Model



B: Education-triggered Dividend Model

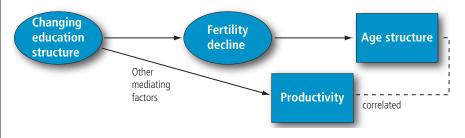


Chart 1: View of conventional Demographic Dividend versus Education-triggered Dividend

planning programs) and the associated increasing proportions of the population of working age, creates a window of opportunity for higher growth rates of income per capita. However, this effect is not seen as automatic, but depends on several enabling factors that also include investments in education. In the conventional model, the dividend disappears when as a longer-term consequence of low fertility, the old-age dependency ratio starts to increase.

In contrast, the recent study by Jesus Crespo Cuaresma, Wolfgang Lutz, and Warren Sanderson (see reference below) demonstrates the empirical validity of the alternative Model B which assigns to education the dual role of helping to bring down fertility and enhancing productivity. In other words, in periods of expanding educational attainment, improvements in the education of women of childbearing age contribute to declining birth rates, while at the same time a more productive workforce (due to the increases in human capital) populates the labor market. The empirical analysis shows that most of the economic growth effect which, under the conventional model A is attributed to the change in age structure, now turns out to be a result of the dual effect of education on fertility and productivity. Model B also provides a more optimistic outlook for the future because the strong productivity-enhancing effect of human capital does not necessarily vanish over time and even aging populations can see continued productivity growth as a function of further improving human capital.

These new conclusions about the role of education were produced using: (1) the educational attainment dataset developed by IIASA and the Vienna Institute for Demography; the dataset was created by applying multi-state demographic backward-projection methods producing consistent time series of educational attainment distributions by age and sex for most countries in the world; and (2) a new specification of the economic growth regression model that integrates the dual role of human capital in its effects both on labor and total factor productivity.

The prior literature on the Demographic Divided distinguishes two sorts of age structure effects on per capita economic growth. On the one hand, income per capita automatically increases if the

S Enli Kudahi Christensen | Dreamstime.com

productivity of the working age population remains constant but the number of dependents decreases. This "accounting effect" does not reflect systematic changes in output per worker. The "productivity effect" occurs when increases in the proportion of the working age population increases the productivity of that population. This is assumed to happen for a number of reasons, including more rapid increases in the capital stock because of the pattern of life cycle saving and because of the reallocation of resources from child-rearing to market-oriented activities.

The new study by Crespo Cuaresma, Lutz, and Sanderson shows that education expansions are able to account for the sizable "productivity effects" which past authors had claimed to be caused by age structure changes. The pure demographic dividend found in the new analysis is therefore reduced to a modest "accounting effect," whose size is significantly smaller than that of the productivity changes caused by the investment in education. If instead of using GDP per capita, economic growth is measured in terms of total GDP, as is often done in international comparisons, then even the accounting effect disappears.

In terms of policy implications most of the empirical studies published in the literature so far have only applied Model A and shown that the change in age structure during the demographic transition is associated with changes in income per capita that went beyond the "accounting effect." These results have served as a justification for advocating family planning policies (combined with other complementary policies to reap the benefits of the demographic dividend) as a strategy to achieve higher growth rates of income in developing economies. Under this view of the world, education expansions have been systematically interpreted as secondary. They are part of the pool of policies that facilitate the reaping of the returns of the demographic dividend, which has been independently produced by an exogenously caused fertility change.

The results of the new study have important implications in terms of development policy in the framework of demographic dividend arguments. Notwithstanding the positive effects of family planning policies on health and well-being and their independent importance under a human rights perspective, the results described here imply that focusing primarily on family planning to reap the returns of the demographic dividend is erroneous. The change in age structure on its own is not the driving force of economic growth during the demographic transition. Instead, a labor force that has the required skills that enable productivity improvements appears as the key factor to ensure higher growth rates of income. Under the model supported by the analysis performed in the study, it is education which appears at the root of the beneficial effects of the demographic dividend, affecting the change in age structure and the growth rate of income simultaneously (Model B in the chart). In the light of the new analysis, the double dividend of education expansions, by simultaneously reducing fertility and increasing productivity, can create a virtuous circle of economic growth and should put human capital investment at the center of global development strategies aimed at poverty reduction.

The article Crespo Cuaresma, J., Lutz, W., & Sanderson, W. C. (2013). Is the demographic dividend an education dividend? Demography, 1–17. doi:10.1007/s13524-013-0245-x can be accessed at http://link.springer.com/article/10.1007/s13524-013-0245-x Free access is made possible by IIASA.

Coordinating a New EU Project on National Transfer Accounts

n January 2014 a four-year collaborative project within the European Commission 7th Framework program—"AGENTA: Ageing Europe: An application of National Transfer Accounts (NTA) for explaining and projecting trends in public finances"—began at the Vienna Institute of Demography (VID). Nine partners across Europe will take part in the project, with VID acting as coordinator.

The recent world economic crisis has placed the focus in Europe on a topic that has been looming for some time. The European population is aging at a rapid rate, and within the next few decades in most countries, the increase in the share of the dependent elderly population will require accompanying changes in the design of public transfer programs. While some countries have undertaken reforms of their welfare state systems (most prominently their pension systems), the need for further reforms is urgent, given the high levels of public debt in many European countries.

The guiding principle of AGENTA is the argument that it is only by considering the whole system of inter-generational transfers, public transfers as well as private transfers within families, that analysts can adequately explain and project public finances and derive evidence-based options for policy reforms.

The AGENTA project aims to explain past effects of taxes and public transfers and services in the European Union and to forecast how these may develop in the future in the light of demographic change.

Conceptually AGENTA puts a special emphasis on:

- The links between the public and the private sector (particularly households) in providing resources for children and the elderly population;
- The links between the different components of the public budget (current investments in the health and other human capital of children shape the need for services and the size of the public budget in the future); and
- The definition of stages of the life cycle such as childhood, active age and old age and the analysis of how these stages affect the economic activity during the life cycle and retirement decisions.

In other words, our project emphasizes that trends in the public sector cannot be fully understood without taking private institutions into account. The guiding principle of the AGENTA project is to provide evidence-based policy proposals to ensure the long-term sustainability of public finances in Europe.

The acronym of the project, AGENTA, has a double reference. The new method of National Transfer Accounts (NTA; see www.ntaccounts. org) will be used to analyze the increasing average AGE that constitutes the aging of European societies. In addition, the output of the project will be strongly policy-oriented, offering an AGENDA for preparing for long-life societies.

National Transfer Accounts

The NTA project was initiated by Ronald Lee at the Berkeley Center on the Economics and Demography of Aging (CEDA) and Andrew Mason at the East-West Center (EWC) at the University of Hawaii. NTA is a new chapter in the development of National Accounts (NAs). In the same way as the Great Depression of the 1930s induced major improvements in macroeconomic analysis and the underlying macro-statistics, the looming aging of societies is now leading to new age-related advances

in public accounting. The current standards of NAs, established in the 1930s and first standardized in the late 1940s and early 1950s, added to the then existing macro estimates of economic output by describing the macro aggregates as flows among institutions, such as households, government, and the corporate sector. NTA now fundamentally corrects the age-insensitivity of NAs by depicting the national income as flows among cohorts.

Allocation of resources across age

In all societies, individuals experience periods when consumption is higher than labor income (a positive life cycle "deficit"), usually at

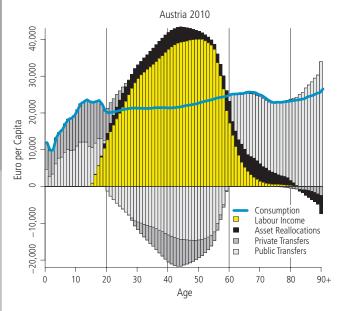


Figure 1. National transfer accounts for Austria.

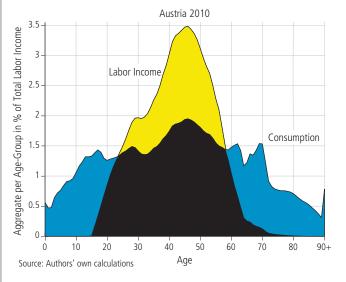


Figure 2. Aggregate labor income and consumption.

young and old ages, while those of working age tend to consume less than the sum of their labor income (a negative life cycle "deficit"). However, the length and extent of these periods of deficit and surplus vary across societies as they are shaped by institutional settings, the overall economic situation, and established norms, values, and attitudes.

To sustain periods of deficit, various mechanisms are established. One such channel is found in government services and transfers, which are more important in Europe than in other regions of the world. Other channels to sustain these periods of deficit are transfers through the family or asset-based reallocations. The extent of these various channels, together with the demographic patterns and trends, will ultimately determine the impact of transfers on public finances. NTA measures how these channels operate at different ages.

Figure 1 presents the basic results from NTA by 1-year age groups for Austria 2010. The components of the net inflows of resources (if positive) are plotted on the positive y-axis: labor income is represented by the yellow area, public net transfer inflows by the light-gray area, private net transfer inflows by the dark-gray area, and asset-based reallocations (ABR) by the black area. The ABR are defined as asset income minus saving. This term represents the amount of economic resources available for consumption and transfers as a result of asset accumulation. The blue line represents consumption. Those age groups for which the net inflows exceed consumption use the excess resources for public and private transfers to other age groups or for asset-based reallocations. These flows represent net outflows and are plotted on the negative y-axis.

In childhood (until age 23 years in Austria) consumption by children is mainly financed through private transfers (from the parents to the child), but to a considerable extent also through public transfers, for example, in form of publicly financed education. In working age an average person generates more income than needed for his/her own consumption and is able to support other age groups with this surplus income. In higher ages the pattern changes again: the age groups older than 58 years in Austria are economically dependent in the sense that the consumption of these age groups is not covered by their own labor income. As they have accumulated assets during their working life, elderly persons finance a part of their consumption through assetbased reallocations. However, in Austria the bulk of the consumption by elderly persons is financed through public transfers such as pensions and publicly provided health- and long-term care services.

To obtain a measure for the dependency of the total population in childhood and old age the life cycle deficit at each age is multiplied by the corresponding population size (Figure 2). The blue area in young and old age represents the aggregate life cycle deficit at young and old age, respectively. The yellow area, in turn, represents the life cycle surplus. In particular, Austria serves as an example to illustrate the importance of the age structure of the population: the peak of the labor income between ages 40 and 50 represents the large contribution of the baby-boom cohort born in the 1960s. The transition of these cohorts into retirement will require a change in the reallocation of resources. This change has to be accommodated by a change in the age-specific economic behavior of individuals (e.g., by extending the working period).

	Aggregate Life Cycle Deficit in % of Labor Income		Age Borders Life Cycle Deficit		Standard Demographic Dependency Rate	
Country	young	old	pos. until	pos. from	young	old
Austria	20	25	24	59	34	29
Finland	26	25	26	60	38	28
France	29	24	23	59	42	28
Germany	18	30	26	60	31	34
Hungary	22	27	24	58	33	27
Italy	26	32	27	60	31	33
Slovenia	24	24	25	58	30	26
Spain	25	23	26	60	31	27
Sweden	25	23	26	64	40	31
UK	27	25	26	59	40	28
Average	24	26	25	59	35	29

Table 1 shows the aggregate LCD in young and old age and compares it with the commonly used demographic dependency ratios. The demographic dependency ratios are calculated as the ratio of the population below 20, respectively above 64, to the population aged 20-64 years. Obviously this indicator gives only a limited and biased estimate of the economic dependency. It neither takes into account the degree of economic dependency nor the degree of the ability to support others. The aggregate LCD reflects the age structure of the population as well as age-specific labor income and consumption. It measures the consumption of children and elderly persons which cannot be financed out of their own labor income as a share of total labour income. The importance of taking into account country-specific economic characteristic can be seen at the differences between these two measures and at the age borders between a positive and negative LCD. According to the LCD an average young person stays economically dependent for around 5 years longer (up to age 23-26) than assumed in the demographic dependency ratios. In old age individuals become economically dependent again about 6 years earlier compared with the assumed age limit of 65 years for the demographic dependency ratio.

Evidence shows that Education is Reducing Vulnerability to Natural Disasters and hence unavoidable Climate Change

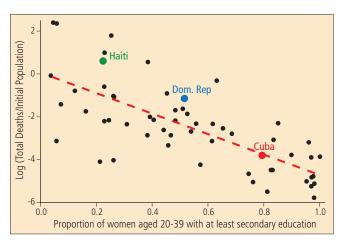
s part of a larger project on "Forecasting Societies' Adaptive Capacity to Climate Change" (an Advanced Grant of the European Research Council (ERC) to Wolfgang Lutz), a Special Feature, "Education and Differential Vulnerability to Natural Disasters," is published in *Ecology & Society* (http://www. ecologyandsociety.org/issues/view.php?sf=73). The basic hypothesis being tested is that societies can develop the most effective longterm defense against the dangers of climate change by strengthening human capacity, primarily through education – which helps to improve health, eradicate extreme poverty, and reduce population growth. The 11 empirical studies published in the Special Feature try to assess the validity of this hypothesis under very diverse geographic, socioeconomic, and cultural settings. Empirical evidence from different societies based on analyses of various data sources from individual- and householdlevel data, village-level studies, and national case studies to global-level time series analysis is presented. What all the studies have in common is that they explicitly address the effects of education on disaster vulnerability and compare them to other possible relevant effects. Since the consideration of education as a possible protecting factor has so far been largely absent from the scientific literature on disaster vulnerability, this set of papers charts new territory.

A variety of disaster-related outcomes are investigated in this special issue, ranging from pre-disaster phase, during disaster events, to disaster aftermath. Prior to a disaster event, mitigation efforts could help reduce vulnerability to disaster impacts such as injuries and loss of life and property. Avoiding building in areas of high hazard is one effective mitigation action. The case study of households in Brazil and El Salvador reports that residents of high-risk areas have on average lower levels of education than households living in low risk areas (Wamsler et al. 2012). Correspondingly, the study of tsunami-risk areas in southern Thailand shows that individuals and households with higher education had greater disaster preparedness, for example, stockpiling emergency supplies and having a family evacuation plan (Muttarak and Pothisiri 2013). Sharma and colleagues (2013) found that, during the disaster event, the verbal clarity of cyclone warnings in coastal zones in India increased the likelihood of evacuation, with the effect being greatest among the most educated group.

The post-disaster phase mainly concerns disaster impacts and recovery. With respect to physical impacts, the cross-national time series analysis of deaths from natural disasters, as well as the study of human lives lost from floods and landslides in Nepal, consistently show that countries with a higher proportion of women with at least secondary education and communities with a higher mean year of schooling suffered lower mortality from disasters (KC 2013; Striessnig et al. 2013). The comparative study of Haiti, Dominican Republic, and Cuba by Pichler and Striessnig (2013) also reports lower disaster-related mortality in Cuba, the country with the most educated population of the three. At the individual level, the longitudinal study of households located in Aceh and North Sumatra, Indonesia, report that men who completed senior secondary school were significantly more likely to survive the 2004 Indian Ocean tsunami compared to those with primary education (Frankenberg et al. 2013). Those authors also found that women with higher education were less likely to be caught up in the water or injured. Similarly, an analysis of malaria risk in children in eight sub-Saharan African countries by Siri (in press) reports maternal schooling to be significantly inversely associated with the odds of malaria infection. Education is also associated with lower damage and losses in disasters. KC (2013) also found that the number of animal losses and the number of families affected by floods and landslides in Nepal were significantly lower in the villages with higher mean years of schooling. All these findings provide strong evidence that formal schooling can reduce vulnerability in terms of life losses, injury, morbidity, and damage.

Turning to social impacts, the study of the 2004 Indian Ocean tsunami by Frankenberg and colleagues (2013) finds that post-traumatic stress reactivity (PTSR) measured five years after the tsunami was substantially lower among the better educated. It is also found that the better educated were more successful in smoothing consumption, that is, maintaining their level of consumption, after the tsunami. Likewise, the study of the impacts of floods and droughts in Thailand shows that better educated communities did not experience income loss, while communities with lower education suffered a reduction in income after being hit by droughts (Garbero and Muttarak, 2013). The lower psychological and economic impacts imply that better educated individuals and communities may cope better with disasters and need to spend less time recovering.

One reason why formal education can enhance coping strategies in the aftermath of a natural disaster is that highly educated individuals or households may have more flexibility and better skills that will allow them to take up a new job, or have better socioeconomic resources to buffer the income loss from climatic shocks. Indeed, a study by van der Land and Hummel (2013) of villagers in rural areas in Mali and Senegal showed that respondents with a higher level of education are less vulnerable to natural hazards because they have more diversified economic activities beyond agriculture and that they are hence less dependent on climatic or environmental factors. Likewise, people with a higher level of education have a wider portfolio of coping strategies. It was found that highly educated individuals and households in Uganda, Brazil, and El Salvador were likely to choose mechanisms that are more sustainable and unlikely to lead to chronic poverty and undermine future prospects (Helgeson et al. 2013; Wamsler et al. 2012).



Relationship between deaths from climatic natural disasters and female education.

POPNET

The 11 studies provide consistent findings of the positive impact of formal education on vulnerability reduction and adaptive capacity enhancement. The results are robust across units of analysis — be it at individual, household, community, or country level — and across countries being studied. Many studies also show that the effect of education remains significant after accounting for wealth/income. Moreover, in many cases, income/wealth does not indicate a clear tendency toward, or a clear correlation with, vulnerability reduction (KC 2013; Muttarak and Pothisiri 2013; Sharma et al. 2013; Striessnig et al. 2013; Wamsler et al. 2012). Thus there is strong evidence that investment in public education can be a positive externality in vulnerability reduction efforts.

Raya Muttarak and Wolfgang Lutz (Adapted from guest editorial in the special feature "Education and Differential Vulnerability to Natural Disasters" in Ecology & Society)

References

- Frankenberg, E., B. Sikoki, C. Sumantri, W. Suriastini, and D. Thomas. 2013. Education, vulnerability, and resilience after a natural disaster. *Ecology and Society* 18(2). doi:10.5751/es-05377-180216
- 2. Garbero, A., and R. Muttarak. 2013. Impacts of the 2010 droughts and floods on community welfare in rural Thailand: Differential effects of village educational attainment. *Ecology and Society* 18(4). doi: 10.5751/ES-05871-180427
- 3. Helgeson, J. F., S. Dietz, and S. Hochrainer-Stigler. 2013. Vulnerability to weather disasters: The choice of coping strategies in rural Uganda. *Ecology and Society* 18(2). doi:10.5751/ES-05390-180202
- 4. KC, S. 2013. Community Vulnerability to Floods and Landslides in Nepal. *Ecology and Society* 18(1). doi:10.5751/ES-05095-180108
- Muttarak, R., and W. Pothisiri. 2013. The role of education on disaster preparedness: Case study of 2012 Indian Ocean earthquakes on Thailand's Andaman Coast. Ecology and Society 18(4): doi:10.5751/ES-06101-180451
- Pichler, A., and E. Striessnig. 2013. Differential vulnerability to hurricanes in Cuba, Haiti, and the Dominican Republic: The contribution of education. *Ecology and Society* 18(3): 31. doi:10.5751/ES-05774-180331
- 7. Sharma, U., A. Patwardhan, and A. G. Patt. 2013. Education as a determinant of response to cyclone warnings: Evidence from coastal zones in India. *Ecology and Society* 18(2). doi:10.5751/es-05439-180218
- 8. Siri, J. in press. Independent Associations of Maternal Education and Household Wealth with Malaria Risk in Children. *Ecology and Society* 18(1).
- Striessnig, E., W. Lutz, and A. G. Patt. 2013. Effects of Educational Attainment on Climate Risk Vulnerability. Ecology and Society 18(1). doi:10.5751/ES-05252-180116
- Van der Land, V., D. Hummel. 2013. Vulnerability and the role of education in environmentally induced migration in Mali and Senegal. Ecology and Society 18(4). doi:10.5751/ES-05830-180414
- Wamsler, C., E. Brink, and O. Rantala. 2012. Climate change, adaptation, and formal education: The role of schooling for increasing societies' adaptive capacities in El Salvador and Brazil. Ecology and Society 17(2). doi:10.5751/es-04645-170202.

The International Seminar Demographic Differential Vulnerability to Natural Disasters in the Context of Climate Change Adaptation has been organized as a concluding meeting of the ERC Advanced Grant awarded to Wolfgang Lutz. The seminar, to be held on 23-25 April 2014 in Kao Lak, Phang Nga province, Thailand, has been jointly organized by the International Union for the Scientific Study of Population (IUSSP) Scientific Panel on Climate Change, the College of Population Studies, Chulalongkorn University (Bangkok), and the Wittgenstein Centre for Demography and Global Human Capital (IIASA, VID/ ÖAW,WU). The original research papers to be presented address the issues of demographic differential vulnerability, that is, the differences in responses, impacts, coping strategies, recovery, and adaptation strategies to natural disasters and climate extremes by population subgroups (e.g., age, gender, education, wealth, ethnicity, religion, and geographical location). Half a day of the seminar is also dedicated to a presentation of research papers related to differential vulnerability in coastal areas of Thailand and a round table discussion with stakeholders on climate change, demographic challenges, and the socioeconomic outlook for Thailand's southern coast.



WIC news



Clarifying the role of women's education in reproductive decision making with Elise Richter grant

large body of literature has investigated the role of women's education in reproductive decision making. However, these studies have yielded inconsistent findings. Indeed, the effect of women's education on fertility is predominantly, but not exclusively, a negative one and may vary across countries, time, and individuals' reproductive span. Maria Rita Testa has won a grant from the Austrian Science Fund (FWF) to explore the dynamic between reproductive decision making and human capital. In the course of this project (2.5 years), she will examine the relationship between reproductive decisions and human capital in a cross-country comparative approach with the aim of reconciling the inconsistent findings revealed in different studies. The main research question in the project is about whether, and to what extent, highly educated women are able to anticipate the negative effects of postponement on their reproductive career by incorporating them into their lifetime fertility intentions; and to what extent they still plan – maybe unrealistically – a family with two (or more) children. More generally, the researcher will investigate the conditions under which a positive relationship between women's educational level and childbearing intentions is observed. The results obtained within the framework of the project will upgrade the scientific knowledge on the reproductive decision making of different social groups, and may thus warrant more diversified modes of policy intervention.

The Elise Richter Program aims to support the academic career of extremely well qualified female scientists. The Elise Richter grant adds to the numerous other grants won by researchers at the Wittgenstein Centre for Demography and Global Human Capital.

Maria Rita Testa is a senior researcher at the Vienna Institute of Demography (OEAW) and the Vienna University for Economics and Business. She received her PhD in Demography from the University of Florence in 2000. She has held positions at the University of Rome "La Sapienza" (1996-1997; lectureship), University of Florence (1997-1999; doctoral student), and University of Milan Bicocca (2000-2001; assistant professor). Her research interests are: dynamics of fertility in Europe, family size ideals, desires, and expectations in Europe; multilevel and duration models.

For more information and contact details of Maria Rita Testa see: www.oeaw.ac.at/wic/fileadmin/user_upload/CVs/CV_Testa_2013. pdf

Exploring the interplay between medical progress, health expenditure and population aging with an Austrian Science Fund grant



he nexus of population aging, health expenditure, and medical progress is attracting great political and academic interest. While empirical work reveals the interdependence of the three phenomena, little is yet known about (i) the nature of the dynamic interrelationships; (ii) the way in which the individual demand for health care, its supply by physicians and hospitals as medical providers, and the supply of medical innovations drive the process; and (iii) the way in which the resulting outcomes in terms of health, population structure, and health expenditure are affected by policymaking. With a newly awarded stand-alone research grant from the Austrian Science Fund (FWF), Michael Kuhn, a member of the Wittgenstein Centre for Demography and Global Human Capital, intends to make a substantial input into better understanding health policy options in light of the triple dynamics of aging, health expenditure, and medical progress.

The project will derive—on the basis of realistic mortality patterns—an age-specific individual demand for health care. Aggregating across cohorts, it will show how the total demand for health care translates, via the medical sector, into a demand for medical innovation. There is mounting evidence that medical innovation curbs mortality. But then, innovation feeds back into the demand for health care and into health expenditure at individual level and, through a changing age structure of the population, at aggregate level. The project will assess the efficiency of this circular development and how it depends on the competitive and institutional environment. Extensive numerical analysis of the model, based on US and European data, will allow the sustainability of current health care policies to be studied and optimized policies to be derived.

Michael Kuhn has been a senior researcher at the Vienna Institute of Demography since 2008. In 2001 he received a doctorate in economics from the University of Rostock, Germany. Since then he has held positions at the Centre of Health Economics, University of York, UK (1999-2004; lectureship) and at the Max-Planck-Institute for Demographic Research/University of Rostock, Germany (2005-2008; junior professorship). His research interests lie in mathematical modeling of the life-cycle choices involved in individual health care, of health policies, and of the interplay between health care, the population, and the economy.

For more information and contact details of Michael Kuhn see www.oeaw.ac.at/vid/staff/staff michael kuhn.shtml

The Wittgenstein Centre Data Explorer

The Wittgenstein Centre Data Explorer developed by IIASA World Population Program scientists in partnership with VID researchers under the umbrella of the Wittgenstein Center for Demography and Global Human Capital will become available online. Designed using R+Shiny, the Data Explorer will provide data, projection assumptions, and results on the population of all world countries (195) by age, sex, and education for alternative scenarios from 2010 to 2060 with extensions to 2100, based on a half-dozen scenarios. Other indicators related to fertility, mortality, and migration will also be available. There will be the option of consulting the data online or downloading into a file (CSV) that can also be read using the software. The Data Explorer will include graphical representation in the form of dynamic pyramids and maps. The users will also be able to access links to the relevant meta-data for more details.

You will be able to get access to the data starting from April 2014 at www.wittgensteincentre.org/dataexplorer

New MSc Program in English at WU-Vienna with Focus on Demography

As part of the new two-year English language Master of Science Program called Socio-Ecological Economics and Policy (SEEP), students can choose "Population, Human Capital, and Policy" as one of their four focus areas. Participants will receive thorough theoretical and hands-on computational training in demographic modeling and analysis with a focus on policy-relevant projections and scenarios. Currently the course is being taught and the theses supervised by Wolfgang Lutz, Sergei Scherbov, Maria-Rita Testa, and Erich Striessnig.

Application deadline for the course starting in October 2014 is 8 March 2014. For more information see www.wu.ac.at/master/en/seep. Admission is competitive, but tuition will be free of charge for successful students from the EU and many developing countries.

Call for papers

Wittgenstein Centre International Conference New measures of age and aging Vienna, 4-5 December 2014

Conventional measures of aging produce a biased picture of the future, as they do not take into account that age-specific characteristics of people change over time. An obvious example would be the 65-year-olds today who are healthier and have a longer life expectancy than those of past generations. The purpose of the conference is to investigate how best to take changing age-specific characteristics of people into account to produce better and more informative measures of aging.

The conference coordinators are Sergei Scherbov and Warren Sanderson. Selected conference contributions will be published in the thematic issue of the Vienna Yearbook of Population Research.

Please send your 1-page abstract to conference.vid@oeaw.ac.at by 30 June 2014









POPNET

Copyright © 2014 IIASA

International Institute for Applied Systems Analysis A-2361 Laxenburg, Austria Telephone: (+43 2236) 807 0 Fax: (+43 2236) 71 313 Web: www.iiasa.ac.at E-mail: popinfo@iiasa.ac.at

Managing Editor: Tatyana Haplichnik Printed by Remaprint, Vienna

Sections of *POPNET* may be reproduced with acknowledgment to the International Institute for Applied Systems Analysis. Please send a copy of any reproduced material to the Managing Editor.

The views and opinions expressed herein do not necessarily represent the positions of IIASA or its supporting organizations.

IIASA is an international scientific institute that conducts research into key global issues that we face in the twenty-first century: Energy and Climate Change, Food and Water, Poverty and Equity.

IIASA National Member Organizations

Austria, Australia, Brazil, China, Egypt, Finland, Germany, India, Indonesia, Japan, Republic of Korea, Malaysia, Netherlands, Norway, Pakistan, Russia, South Africa, Sweden, Ukraine, United States of America, Vietnam