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## USING TAX POLICY TO ADDRESS BRAIN DRAIN AND DEPOPULATION: THE CASE OF CROATIA

*As the end of the Twenty-Tens approaches, there is a growing public consensus in Croatia that the key challenge facing the country is of demographic nature. Put simply, the accession to the European Union (EU) in July 2013 only exacerbated the negative trends regarding the emigration of mostly young and high-skilled workers to other, more developed countries. However, policymakers have hitherto failed to offer a comprehensive set of countermeasures, with tax policy being no exception. Accordingly, it is the aim of this paper to explore possible tax measures the Croatian legislator may employ in tackling the brain drain phenomenon, with special emphasis on highly skilled workers. More specifically, starting from the assumption that policymakers want to assume a more proactive role in addressing brain drain, the main contribution of the paper is in drawing the contours of a coherent tax-related response to this issue.*

Key words: *Brain drain. – Tax policy. – Personal income tax. – Preferential tax regimes. – Exit taxation.*

### 1. INTRODUCTION

“Demographic disaster”, “Croatian exodus”, “Massive immigration worse than in the times of war” – these and similar headlines have appeared frequently in the Croatian media in recent years, painting a dire picture of the demographic trends and related socio-economic challenges the country is faced with at the end of the current decade.<sup>1</sup> While a

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<sup>1</sup> See, for example, <https://www.slobodnadalmacija.hr/novosti/hrvatska/clanak/id/580359/prava-demografska-katastrofa-iz-hrvatske-je-iselilo-cak-26-puta-vise-ljudi-nego->

number of forces underlie these developments, it is beyond doubt that the Croatian accession to the European Union (EU) in July 2013 only exacerbated the problem. Put simply, troves of Croatian citizens have taken advantage of the EU freedom of movement and emigrated to other, more developed Member States, such as Germany and Ireland. While the sheer number of émigrés is staggering – one study puts it at 230.000 in the 2013–2016 period alone (Draženić, Kunovac, Pripužić 2018, 436) – their structure causes even more concerns. Namely, in the post-EU accession period there is a notable increase in the emigration of both younger and highly-skilled people (Knezović, Grošinić 2017, 34). Special concerns relate to the flight of healthcare professionals and experts in other propulsive sectors of the economy, e.g. in the information and communication technology (ICT) sector.

Accordingly, the phenomenon of ‘brain drain’ – defined as the emigration of skilled and professional workers from a country (Wong 2009, 131) – is a genuine problem, albeit not a completely new one, that Croatian policymakers have to grope with. While the socio-economic implications of brain drain are undeniably deep and rather daunting, there is a general public consensus that hitherto no comprehensive set of policy countermeasures has been offered to this effect. This also applies to the more limited sphere of tax policy, even if cross-country experience confirms that tax instruments may play an important role in addressing international mobility of high-skilled labour (OECD 2011, 124).

In this respect, it has to be noted that the body of economic research confirms that cross-country differentials in individual income taxation play a role in people’s location decisions.<sup>2</sup> Moreover, such responsiveness seems to be higher for specific categories of workers, such as high-income earners and people whose human capital is not location-specific (e.g. inventors) (Kleven *et al.* 2019; Muñoz 2019). In any case, contemporary migration literature acknowledges that individual countries often use tax policy to address both outbound and inbound cases of highly-skilled migration. Regarding the former, one may speak of ‘protective’ or ‘defensive’ tax instruments, such as an exit tax imposed on the emigrant,

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*sto-kaze-nasa-sluzbena-statistika-najvise-se-odlazi-u-tri-europske-drzave*; <https://www.vecernji.hr/vijesti/demografska-katastrofa-iz-hrvatske-iselilo-vise-od-20-000-djece-1243509>; <https://www.slobodnadalmacija.hr/novosti/hrvatska/clanak/id/580359/prava-demografska-katastrofa-iz-hrvatske-je-iselilo-cak-26-puta-vise-ljudi-nego-sto-kaze-nasa-sluzbena-statistika-najvise-se-odlazi-u-tri-europske-drzave>; <https://www.vecernji.hr/vijesti/demografska-katastrofa-iz-hrvatske-iselilo-vise-od-20-000-djece-1243509>; <https://www.index.hr/vijesti/clanak/becki-institut-masovno-iseljavanje-iz-hrvatske-kakvog-nije-bilo-ni-u-ratovi/2075476.aspx> (all last visited 31 October 2019)

<sup>2</sup> For an overview see, for example, OECD (2011, 128–129); Kleven *et al.* (2019).

while the latter may be designated as ‘offensive’ measures, e.g. a preferential tax regime offered to immigrants.<sup>3</sup>

Against this broad backdrop, it is the aim of the present paper to explore possible tax policy measures the Croatian legislator may employ in tackling the brain drain, with the special emphasis on highly skilled workers (HSWs), i.e. individuals with at least a tertiary level of education.<sup>4</sup> More specifically, in Section 2 the paper provides a depiction of migration and demographic trends in Croatia, serving as an illustration of why urgent policy action is warranted. In Section 3 it subsequently provides a general overview of the tax instruments that may be used on the domestic level to tackle the brain drain, allowing for lessons be drawn from cross-country experiences. Presuming that Croatian policymakers want to assume a more proactive role in addressing brain drain, Section 4 proceeds with the analysis of pertinent developments hitherto and proposes future course of action. In doing so, particular attention is paid to the newly proposed preferential tax scheme for ‘young workers’, which is expected to come into force in 2020. While this tax scheme suffers from serious shortcomings, some building blocks of what the author believes should be a coherent tax policy response to the brain drain are expounded, with the aim to influence future debate. The main outcomes of the analysis are summarized in the concluding section of the paper.

Conversely, the design of a global or multilateral solution to the brain drain phenomenon, which is inextricably tied to cosmopolitan perspectives to tax justice, is beyond the scope of the present paper.<sup>5</sup> While the author shares the view that such an approach is indeed desirable and may offer long-term answers to the most pertinent problems, it is hugely debatable whether it constitutes a truly realistic option under the current framework of international tax governance.

## 2. CROATIAN BRAIN DRAIN: IS THERE THE NEED FOR SERIOUS ACTION?

While it is beyond the scope of the present paper to analyse the specificities of the Croatian brain drain in great detail, it is undeniable that any “anti-brain drain policy” – including tax measures – has to be informed by at least a basic understanding of the phenomenon. Put simply,

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<sup>3</sup> Both sets of measures will be explored in detail below, in Section 3. In doing so, the paper departs from the analytical framework laid out in Berretta (2018).

<sup>4</sup> While there is no ubiquitous definition of HSWs, the present paper departs from the assumption that “highly skilled” actually means “highly educated”. See the definitions used by the OECD (2011, 124) and the European Committee of the Regions (2018, 7).

<sup>5</sup> Such is the perspective taken, e.g. by Brock (2015) and Lister (2017).

domestic policymakers have to assess the magnitude of the brain drain, evaluate the main factors that influence the location decisions of Croatian migrants, and estimate the overall socio-economic effects of these dynamics. Therefore, this section proceeds with a brief description of migration and demographic trends in Croatia, serving as an illustration of why urgent policy action is warranted.

At the outset it is vital to note that Croatia has historically – since the 15<sup>th</sup> century – held the status of an emigration country, due to a combination of economic and political factors (Župarić-Iljić 2016, 16). While the country's favourable geographic position and overall standard of living have traditionally also attracted troves of immigrants, particularly from other countries of South-East Europe (Knezović, Grošinić 2017, 16), the negative net migration balance during the entire 20<sup>th</sup> century has been estimated at 1.2 million (Gelo, Akrap, Čipin 2005, 70). It is a well-known fact that, among countries of comparable size, Croatia has one of the largest diaspora communities, with more than 3 million Croatian citizens living abroad, compared to a domestic population of around 4.2 million (Knezović, Grošinić 2017, 26–27).

The most recent emigration wave of Croats could be traced down to the beginning of the economic downturn in the country in 2009. The ensuing recession lasted for six years (2009–2014), making Croatia as one of the worst economic performers among EU member states. Unsurprisingly, faced with such dire economic conditions – especially a lack of employment opportunities – a number of citizens opted to leave the country. In fact, official government data compiled by the Croatian Bureau of Statistics (CBS) suggests that the onset of the crisis reversed the trend of positive net migration from the beginning of the 21<sup>st</sup> century (Draženović, Kunovac, Pripužić 2018, 420). The relatively low and stable rates of negative net migration post-2009 have taken a visible turn for the worse since the Croatian accession to the EU in July 2013, demonstrating clearly that the access to the EU labour market constitutes one of the major drivers of emigration (Župarić Iljić 2016, 16–17).

There has been a lively public debate in Croatia on the exact magnitude of these most recent migration flows. Due to a number of factors, mainly of methodological nature, the official migration statistics issued annually by the CBS have been rejected as unreliable in literature, with a shared view that the real numbers of emigrants are significantly higher.<sup>6</sup> As an illustration, while official data puts the negative migration balance – including the relations with non-EU countries – in the 2013–2018 period at around 100,000 (Croatian Bureau of Statistics 2019a), a recent study based on official data compiled by the destination countries

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<sup>6</sup> In this regard, we can refer to a comprehensive account provided in Draženović, Kunovac, Pripužić (2018).

estimates that 230,000 people left for other EU countries in the 2013–2016 period alone (Draženović, Kunovac, Pripužić 2018, 436). The numbers seem ever more worrying when viewed together with the negative trends regarding natural population decrease, with the total number of deaths outnumbering the total number of live births by 106,000 in the 2009–2018 period (Croatian Bureau of Statistics 2019b). In fact, Croatia is one of only ten countries in the world that have experienced both negative natural increase and negative net migration in the current decade (2010–2020) (United Nations 2019, 35), thus fuelling concerns of population decline and ageing. According to the UN's World Population Prospects 2019, in the year 2100 Croatia is expected to number less than 2.2 million inhabitants.<sup>7</sup> Another recent study estimates that by the year 2050 around 45% of the domestic population will be aged 55 years or more (Eurostat 2019a, 15).

Beyond the sheer number of people who have left the country, the recent migration flows raise even more concerns when one takes a look at the structure of émigrés. First, it seems that the average age of emigrants has decreased sharply in the post-EU accession period (Draženović, Kunovac, Pripužić 2018, 420–421). In 2018 around 45% of the emigrants were ages 20–39 (Croatian Bureau of Statistics 2019a). Accordingly, a particular source of concern that most emigrants are in their prime age regarding fertility and work abilities (Župarić Iljić 2016, 23). Second, statistical shortcoming aside, it may be reasonably assumed that the EU accession intensified emigration of highly-skilled labour (Knezović, Grošinić 2017, 34; Jurić 2017, 349). According to the report published by the European Committee of the Regions (2018, 12), in the 2014–2017 period Croatia recorded the second largest increase in the number of highly-educated movers (+46%), i.e. migrants with a tertiary level of education, among the EU member states.

While comprehensive sectoral analyses have been largely absent, anecdotal evidence suggests that the brain drain has had significant effects in the healthcare and medical sector (Župarić Iljić 2016, 23–24). In the 2013–2018 period, 525 doctors aged between 25 and 46 have left the country (Vračić 2018, 7). A recent survey conducted among doctors and other healthcare professionals revealed that more than 50% of the doctors aged 45 or younger are thinking about leaving Croatia.<sup>8</sup> Further concerns relate to the flight of experts in the field of ICT, with the number of these highly-sought professionals leaving the country far exceeding the number

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<sup>7</sup> These detailed projections are available at <https://population.un.org/wpp/Download/Probabilistic/Population/> (last visited 31 October 2019)

<sup>8</sup> The survey was conducted by the Croatian Medical Chamber in September 2019. The data is available at <https://www.hlk.hr/istrazivanje-hlk-cak-60-posto-lijecnika-spremno-povuci-suglasnost-za-prekovremeni-rad.aspx> (last visited 31 October 2019)

of newly graduated ICT experts entering the domestic labour market. Put simply, Croatia is at the losing side of intra-EU migrations linked with the so-called knowledge economy (European Committee of the Regions 2018, 9–14).

Regarding the main drivers of emigration from Croatia, there is an amalgam of different ‘push’ and ‘pull’ factors at work (Župarić Iljić 2016, 2–3). A recent empirical analysis confirms that access to the EU internal market has indeed been the main driver of emigration since 2013 (Draženović, Kunovac, Pripužić 2018, 435). However, other important factors include the differentials in short-term economic conditions between origin and destination countries (including, e.g. labour market indicators) as well as the degree of corruption in a country (Draženović, Kunovac, Pripužić 2018, 432–436). The importance of non-economic drivers of emigration is confirmed in a number of other studies. For example, in an analysis of the motives for emigration to Germany – by far the most popular country of destination for Croatian emigrants post-2013 – Jurić (2017) highlights the importance of push factors such as corruption, immorality of political elites and legal uncertainty. This is an important lesson for policymakers, since it calls for a holistic approach to the brain drain phenomenon, beyond pure economics.

In any case, these new migratory trends are usually the topic of public discussion in Croatia in terms of their negative socio-economic effects. Biggest concerns relate to the loss of human capital – particularly young, highly skilled professionals – distortions in the labour market, a decrease in the overall productivity of the economy, and the ensuing pressures on the social safety net (Župarić Iljić 2016, 23). On the other hand, policymakers have to be aware that emigration may also have some positive effects, both in the short and long term. Notably, it is quite possible that emigrants may in due time return to their country of origin, armed with newly acquired knowledge and skills. Thus, the related concepts of ‘brain regain’ and ‘brain circulation’ have been long acknowledged in migration literature as potential benefits for the sending countries or regions.<sup>9</sup> Further alleviation of the brain drain problem may come in the form of remittances sent to the country of origin by citizens working abroad. In the case of Croatia, these transfer of money from abroad amounted to almost 2.2 billion USD – or 4.3% of the domestic GDP in 2017 (United Nations 2017, 30).

Finally, it has to be noted that the intra-EU mobility of Croatian workers since the accession in 2013 has been subject to some important limitations, since a total of 13 EU Member States employed transitional restrictions on access of workers from Croatia to their respective labour

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<sup>9</sup> For an overview see Brauner (2010, 228–237).

markets.<sup>10</sup> As of July 2018 such restrictions are applied only by Austria, which is traditionally – due to geographic proximity and a variety of historic, cultural and socio-economic causes – an important country of destination for Croatian citizens (Župarić Iljić 2016, 18). This last transitory measure will expire by July 2020, adding to the urgency for domestic policymakers to devise a comprehensive brain drain strategy.

### 3. TAX POLICY RESPONSES: AN OVERVIEW

While the primary purpose of taxation is raising revenues necessary for the financing of public goods, taxes – or, more precisely, certain elements of a particular type of tax – may also have other purposes.<sup>11</sup> According to Avi Yonah (2006, 22–25), aside from a pure fiscal or revenue-raising goal, modern day taxation has two other main functions – redistribution of income and regulation. The latter entails the usage of taxes with the aim to affect the behaviour of citizens, corporations, and other private sector actors, either by incentivizing some activities or by disincentivizing – or rather penalizing – others. This theoretical framework offers a good backdrop for considering the role of taxation vis-à-vis the international mobility of individuals. Namely, countries may employ various tax schemes with a regulatory aim of influencing location decisions of prospective migrants. These measures should obviously be tailored to the local idiosyncrasies regarding migration flows and the overall socio-economic context, with some countries – like Croatia (see Section 2 above) – being under pressure to act to reverse the negative migration trends, while others – usually developed countries – may use tax measures to utilize the ever-growing global mobility of individuals to their advantage, by attracting international talent with, *inter alia*, a competitive economic and tax climate. Further justification for some of these schemes may be found in the traditional legal and economic principles of taxation, such as the ability to pay principle or the benefits principle.

Tax policy responses to the new reality of mobile highly-skilled workers may be divided into two main groups (Beretta 2018, 7). First, there are ‘protective’ or ‘defensive’ tax measures that may be used by a country of emigration (the ‘sending country’) and that, in the jargon of migration literature, have the effect of a ‘pull’ factor. Put simply, here the

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<sup>10</sup> A brief overview of these transitory measures, with their date of expiry, is available at <https://ec.europa.eu/social/main.jsp?catId=1067&langId=en> (last visited 31 October 2019).

<sup>11</sup> This is sometimes referred to in the literature as the ‘instrumentalism’ of tax law. See, for example, Gribnau (2003, 25).



sending country reacts to prospective migration by protecting its tax claims on emigrants' income, encompassing the income accrued but not realized before the relocation and the income emigrants may derive in the future. Accordingly, it is possible to differentiate three main types of defensive measures (Beretta 2018, 11): 1) exit taxes; 2) trailing taxes; and 3) claw-back provisions regarding the tax benefits granted in the previous period.

The second group of tax measures may be labelled as 'offensive', in that they are used to induce immigration of HSWs – which may include the return of previous emigrants – into the country. Such schemes may be labelled as 'preferential tax regimes' or 'tax concessions', since here the country grants some kind of beneficial tax treatment (e.g. reduced tax rate) to a targeted group of mobile individuals (Beretta 2018, 19; OECD 2011, 137–141).

The rest of this section proceeds with an analysis of specific defensive and offensive tax measures targeting brain drain, on the basis of selected comparative examples. Since the goal of this exercise is to draw lessons for particular case of Croatia, of special importance is to explore the legal and economic underpinnings of these schemes.

### 3.1. Defensive measures

From a purely international tax perspective, the event of an individual's emigration from a country is important since it generally results in the termination of the link (nexus) between that country and the individual providing the legal basis for the imposition of income tax.<sup>12</sup> In other words, the individual ceases to be a tax resident of the origin country and her income is thus placed outside of the ambit of that state's tax jurisdiction. The ensuing revenue loss for the coffers of the state of emigration is yet another concern related to global migration flows of young professionals. On this point, one needs to distinguish between at least two parts of the income that is relocated beyond the jurisdictional reach of the emigration state (De Broe 2002, 23; Beretta 2018, 10): (i) gains accrued but not yet realized before the emigration, including the appreciations of the migrant's assets; (ii) income accrued to the taxpayer post-migration, e.g. income from future employment or investment.

Accordingly, a number of countries have made a sovereign decision to impose some sort of a 'departure tax' (or 'emigration tax'), i.e. a tax triggered by the individual's departure from the country.<sup>13</sup> The main

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<sup>12</sup> For a general discussion on the 'income tax nexus' in international tax law see Gadžo (2018).

<sup>13</sup> For terminological nuances and the differentiation between the terms 'exit tax', 'emigration tax' and 'departure tax', see, for example, De Broe (2002, 23–25). Of course,

justification provided in tax literature for such measures relates to the legal fundamentals of taxing cross-border income: the state of departure is free to protect its latent taxing claim over the income that is accrued in its territory as well as extending taxing claim on future revenue streams of ex-residents (De Broe 2002, 23). In the well-known jargon of EU tax law, emigration taxes are *prima facie* reasonable since they ensure fiscal coherence, at least from the viewpoint of the state of emigration (Terra, Wattel 2012, 955–956). However, for the purpose of a meaningful analysis of the normative merits of such measures, it is useful to clearly separate three main types of departure taxes (De Broe 2002, 23): (i) a general or limited exit tax on the accrued gains; (ii) extended tax liabilities or trailing taxes; and (iii) recaptures of the tax benefits enjoyed pre-departure.

Regarding ‘classical’ exit taxes, it is self-evident that any taxation of accrued unrealized income – whether it extends to all assets belonging to the expatriate (e.g. in Canada or Australia), or is limited only to specific types of property (e.g. the Dutch regime of taxing ‘substantial shareholdings’)<sup>14</sup> – acts as a disincentive for migration (Arsenault 2009, 59). However, it is extremely doubtful whether this extra cost of departure will offset the expected benefits of the move and thus influence the location decision (Brauner 2010, 265). Further justification for an exit tax regime may be found in the so-called ‘benefits principle’, which is one of the two main benchmarks of equity or fairness in the distribution of tax burden among individual taxpayers.<sup>15</sup> Put simply, the imposition of a tax burden on the act of emigration may be justified by the benefits the taxpayer in question has previously enjoyed in the state of departure, including the legal protection of her assets.<sup>16</sup> Indeed, it has been acknowledged in tax scholarship that economic cooperation between society members gives rise to certain mutual benefits; in turn, society members need to accept some distributive obligations, including tax obligations (Gadžo 2018, 208). Such benefits provided by the government and other entities belonging to the public sector include, *inter alia*, a functioning judicial system, protection of property rights, public infrastructure, etc. According to Dietsch (2015, 80–89) this may be labelled as a ‘membership principle’, demanding that individuals should be liable to tax in a country of which they are member, i.e. countries where they benefit from public services and infrastructure. Against this backdrop, it seems beyond doubt that an emigrant who lived in a country

emigration taxes may be also imposed on corporations and other legal entities, but this is of no relevance for the analysis in the present paper.

<sup>14</sup> For an analysis of Canadian and Dutch exit tax schemes, see Chand (2013).

<sup>15</sup> For a more detailed discussion on the content of tax equity see Gadžo (2018, 200–205), and the sources referred to therein.

<sup>16</sup> This argument has been raised in the U.S. within the debate on the desirability of introducing the tax on expatriates in 2008. See Arsenault (2009, 59).

for a considerable period of time had access to public services and public infrastructure to a reasonable extent, thus making them a member of the society with ensuing distributive obligations. This point is linked to the design of an exit tax scheme in countries that follow the ‘look-back’ approach (e.g. Denmark, Spain, the Republic of Korea), in that they impose the exit only if the expatriate has lived in the country for a substantial number of years before emigrating (Beretta 2018, 13).

Trailing taxes or extended tax liabilities may be more controversial, since they involve the imposition of tax by the origin state in the taxable years following the taxpayer’s departure. Accordingly, while these measures are usually discussed in literature as burdening assets previously connected with the territory of the origin state (De Broe 2002, 29–30; Chand 2013, sec. 2.3), they may also be imposed on the streams of income resulting from future employment or entrepreneurial activity in the state of destination.<sup>17</sup> This is in line with some suggestions in the migration literature – epitomized by the so-called ‘Bhagwati tax’ proposal presented in 1972 – that developing countries, as traditional countries of emigration, should be entitled to a share of the income tax collected on the future income derived by their émigrés (Brock 2015, 52–53). It seems that here the above-discussed benefits argument plays an even more important role than in the case of a classical exit tax. Namely, starting from the assumption that the majority of emigrants are younger, highly skilled individuals<sup>18</sup>, one can identify a trove of public benefits provided to them by the emigration country, including the costs of education and training (Brock 2015, 62–63). This may be perceived as a ‘sunk investment’ that emigration countries may legitimately seek to recuperate, at least partly, by imposing a trailing tax on the former members of their community, i.e. on ex-residents (Brauner 2010, 229). It has to be noted that this type of trailing tax – imposed e.g. on emigrant’s future employment income – raises far more concerns from a public international law perspective, since the legal link between the origin state and the taxpayer is less evident. Accordingly, in terms of design features, such schemes often take the form of a ‘deemed residence rule’, in that the emigrant continues to qualify as a resident of her state of origin post-departure (De Broe 2002, 29–30; Beretta 2018, 15).

Finally, the state of origin may employ the so-called ‘recapture’ or ‘claw-back’ rules, i.e. the rules that allow it to recoup, upon the act of emigration, deductions, deferrals and other tax benefits previously granted to the taxpayer in question (Beretta 2018, 18). While in comparative tax systems recapture rules are not that common and are usually linked to a

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<sup>17</sup> See Beretta (2018, 15).

<sup>18</sup> This, of course, entails an analysis of the individual countries of emigration. For the case of Croatia see the statistics presented in Section 2 above.

deferred tax schemes (e.g. vis-à-vis pension income), they may be justified, similarly to a classical exit tax, by achieving the overall coherence of a tax system. For the purpose of the present paper it is particularly interesting to note how these measures may be used as a backup for a preferential tax regime granted to highly skilled individuals (see below, Section 3.2).<sup>19</sup>

While the preceding discussion in this Section emphasized the reasons why departure taxes may be justified from a policy perspective, the majority of countries around the globe – including Croatia (see Section 4 below) – have so far abstained from introducing such instruments in their tax systems. Indeed, it is rather easy to identify main policy shortcomings linked to the introduction of an emigration tax. First, it has to be acknowledged that any sort of tax imposed on the event of individual's migration *prima facie* runs against the basic economic tenet of tax efficiency, in that people's decisions to move across national borders should not be influenced by a barrier in the form of extra tax burden.<sup>20</sup> As pointed out at the beginning of this section, however, tax legislators often put pure economic logic aside having a legitimate regulatory goal in mind. Second, one may find departure taxes questionable from the perspective of tax equity (fairness), since emigrants may feel that their distributive obligations to the country of origin should cease at the moment of departure, with any ensuing increase in the ability to pay belonging to the tax ambit of the destination country. Of even more concern from the fairness point of view is the potential double taxation that may ensue, depending on the interaction between the tax rules of the state of origin and the state of destination (Beretta 2018, 42). Third, departure taxes may involve significant compliance costs for the taxpayer, as well as administrative costs for the tax authorities of the state of origin, particularly in the absence of relevant international agreements in the area of mutual assistance. Fourth, one also has to have in mind the potential advantages flowing to emigration countries from the global mobility of individuals, including the benefits of "brain circulation" (see Section 2, above).

### 3.2. Offensive measures

Driven by the regulatory goal of inducing highly-skilled individuals to live and work in their own territory, a number of countries employ a specific preferential tax regime provided to this category of (potential) migrants (Kleven *et al.* 2019, 6). This fits well with the competition-based paradigm of international taxation, whereby tax measures are used

<sup>19</sup> For an Italian example in this regard, see Beretta (2018, 18).

<sup>20</sup> On this point in the context of free movement within the EU internal market, see Terra, Wattel (2012, 955).

by states to compete for mobile tax bases (e.g. capital). Put simply, starting from the assumption that wage differentials – which are also affected by the overall tax and social security burden imposed on labour income, i.e. the ‘tax wedge’<sup>21</sup> – are one of key drivers of HSWs’ location decisions<sup>22</sup>, individual countries may offer certain tax incentives for immigration. From a tax-technical perspective, these incentives may take the form of lower tax rates, tax exemptions, tax allowances, deductions, etc. For example, in the year 2010 such incentives were found in tax systems of 16 OECD member states (OECD 2011, 131).

It would be wrong, however, to view preferential tax regimes for HSWs as a policy tool reserved for developed countries. Developing countries may also employ such schemes, either to incentivize return migration, or to increase their overall competitiveness for global talent (Brauner 2010, 266; Del Carpio *et al.* 2016, 2). The latter point is of particular importance today, since no country can ignore the role of human capital in propping up their knowledge-based economy. A good example in this regard is provided by the Malaysian Returning Expert Program (REP). Introduced in 2011, this scheme provides several benefits to Malaysian citizens that have been residing and employed abroad continuously for at least three years prior to application. The benefits granted upon return include a 15% flat tax on employment income, for a period of five years post-return, tax exemptions related to any personal assets the returnee brings into Malaysia, as well as exemption from duties with regard to the purchase or import of a personal vehicle (Del Carpio *et al.* 2016, 7–8). According to data published by the administrative agency in charge of the programme, more than 5,000 individuals have used its benefits in the 2011–2018 period.<sup>23</sup>

The tax concessions provided to HSWs in domestic tax laws may differ considerably in terms of their design. First, it is vital to delimit the subjective scope of the scheme, having in mind the targeted population. While a small group of countries (e.g. Australia, Israel, Spain, United Kingdom) do not demand any skill requirements in order for a migrant to be eligible for the preferential regime, the majority of countries use the so-called targeting provisions, in that the benefits are provided only to migrants possessing certain skill type or level (OECD 2011, 137). Whereas from the administrative perspective it may be simpler to rely on the level of formal education in this regard – e.g. by making the scheme

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<sup>21</sup> For its statistical purposes, the OECD defines tax wedge as “(T)he sum of personal income tax, employee and employer social security contributions plus any payroll tax less cash transfers expressed as a percentage of labour costs.” (OECD 2018, 576).

<sup>22</sup> See note 2 above, and the accompanying text.

<sup>23</sup> See <https://www.talentcorp.com.my/initiatives/returning-expert-programme> (last visited 31 October 2019).

available to everyone holding a tertiary degree – some countries narrow the subjective scope by targeting specific types of prospective workers. For example, the famous Dutch ‘tax ruling scheme’, first introduced in 1985, addresses non-residents with professional expertise and skills that are scarce in the Netherlands, including scientific researchers. In a similar vein, Denmark makes its preferential regime available only to scientists and other employees with a salary above the prescribed high threshold (Casarico, Übelmesser 2018, 31–32). It seems that a sort of a hybrid approach is followed in Italy, offering preferential tax treatment both to migrant researchers and other persons with a certain level of education.<sup>24</sup> Conversely, some taxpayers may be explicitly declared ineligible for the scheme, as is the case with professional athletes in Spain (Beretta 2018, 19).

Countries may further rely on criteria such as nationality or (previous) residence to further limit the subjective scope of the preferential regime. Accordingly, in some cases, such as in Israel or in Malaysia (see above in this Section), the scheme is open only to non-resident citizens. A completely opposite approach is followed in other countries (e.g. Belgium, Korea, Netherlands) targeting only foreign nationals (OECD 2011, 143–144). Quite obviously, in light of freedom of movement within the internal market, EU Member States are prohibited from discriminating in this regard against nationals of other EU countries.

Second, regarding the objective scope of the scheme, in most cases only employment income (i.e. a salary) is covered (Beretta 2018, 19–20). However, a broader, more generous approach may be followed, for example extending the benefits to self-employment income and pension income, as is the case in Portugal (Beretta 2018, 20). Due to administrative complexities associated with migration, there are countries that extend preferential treatment also with regard to immigrant’s foreign-sourced income (e.g. Australia, New Zealand, Portugal) (OECD 2011, 141; Beretta 2018, 20).

Third, the standard approach is to set the time limitations for preferential tax treatment, thus making it a temporary concession (OECD 2011, 142–143). Time thresholds vary across countries, from two years in Finland to 10 years in Portugal (Kleven *et al.* 2019, 27). In this regard it is worthy to take a look at the historic development of the Dutch scheme, which originally relied on a five-year time threshold. At a later point, the threshold was extended to 10 years, while currently it stands at eight years. In any case, time restrictions are closely related with potential

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<sup>24</sup> Detailed information on the Italian scheme is available at [https://www.agenziaentrate.gov.it/portale/documents/20143/233483/Tax+incentives+for+attracting+human+capital+in+Italy\\_Tax\\_incentives\\_for\\_attracting\\_human\\_capital\\_in\\_Italy.pdf/f4a91a80-8ed0-92a5-0186-424a9013bfc3](https://www.agenziaentrate.gov.it/portale/documents/20143/233483/Tax+incentives+for+attracting+human+capital+in+Italy_Tax_incentives_for_attracting_human_capital_in_Italy.pdf/f4a91a80-8ed0-92a5-0186-424a9013bfc3) (last visited 31 October 2019).

policy shortcomings of preferential regimes for HSWs, which is discussed in more detail below.

As already mentioned above, every preferential tax regime for high-skilled workers is primarily a regulatory instrument, in that its main aim is to attract, or retain, targeted individuals in the territory of the given country. This aim is based on the view that there are numerous benefits flowing to the country from an increase in the number of HSWs within its territory. These include, *inter alia*, knowledge-related spillovers increasing the overall level of productivity in the country, positive effects on the labour market in cases of shortages of specific skills, etc. (OECD 2011, 133–134; Casarico, Übelmesser 2018, 31). Put simply, preferential regimes for HSWs constitute a worthy state intervention in order to reap such positive externalities. In this regard it is vital to have in mind the subjective scope of the scheme (see above in this Section), with a number of countries targeting exclusively professionals involved in research and development (R&D) activities.

Likewise, these schemes are a tool of international tax competition, a concept that captures the realpolitik of taxing internationally mobile tax bases, including the labour income of HSWs.<sup>25</sup> In this setting, no country – particularly a small, open economy – can afford to ignore the effective tax burdens in other jurisdiction, and may be forced to reply with its own measures. This seems particularly relevant for high-tax countries and may explicate the introduction of preferential regimes for HSWs in Belgium, Denmark, Finland and Sweden (OECD 2011, 132). Accordingly, some preferential tax schemes may be viewed as having compensatory rather than ‘offensive’ nature in incentivizing the behaviour of global migrants. Similar logic ostensibly underlies granting beneficial tax treatment to various items that may be categorized as ‘costs of migration’, e.g. travel costs, additional costs of relocating other family members, etc. For example, one of the justifications provided by the Dutch government in favour of the preferential regime, whereby 30% of qualified employee’s gross salary may be paid out as a tax free allowance, is that it provides compensation to foreign professionals for the additional costs related to migration.<sup>26</sup>

Proponents of preferential regimes for HSWs will be also quick in pointing out that their overall fiscal effect for the state of destination tends to be positive, even if the government foregoes some revenue in the

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<sup>25</sup> It is beyond the ambit of the present paper to discuss the fundamentals of international tax competition. For an overview see, for example, Faulhaber (2018).

<sup>26</sup> See [https://www.belastingdienst.nl/wps/wcm/connect/bldcontenten/belastingdienst/individuals/living\\_and\\_working/working\\_in\\_another\\_country\\_temporarily/you\\_are\\_coming\\_to\\_work\\_in\\_the\\_netherlands/30\\_facility\\_for\\_incoming\\_employees/30\\_facility\\_for\\_incoming\\_employees](https://www.belastingdienst.nl/wps/wcm/connect/bldcontenten/belastingdienst/individuals/living_and_working/working_in_another_country_temporarily/you_are_coming_to_work_in_the_netherlands/30_facility_for_incoming_employees/30_facility_for_incoming_employees) (last visited 31 October 2019).

first step by granting tax concessions (OECD 2011, 134). Put simply, most migrants – particularly HSWs and workers below a certain age – will be net contributors to the tax and social security system of the immigration country.

On the other hand, there is also a number of policy shortcomings linked with the introduction of preferential regimes for mobile individuals. The primary objection comes from the perspectives of equality and equity, which constitute basic legal principles of taxation, usually embodied in national constitutions.<sup>27</sup> It is abundantly clear that giving HSWs preferential tax treatment violates these legal precepts, since one class of taxpayers is put in a privileged position vis-à-vis other members of society (Li 2009, 54). It should be noted that this fundamental criticism may be raised also with regard to other tax expenditures (Gribnau 2003, 25–27). Moreover, the principle of ability to pay dictates in general that the better-off participate more to the financing of public goods, in relative terms. Since the individuals qualifying for preferential regime tend to possess highly sought skills and thus earn above-average income, it is objectionable on the face of it to require these individuals to make lower tax payments than what is mandated by their respective economic faculties (Beretta 2018, 24–25). On the other hand, it is well-understood among tax scholars that legislators have to balance the general normative guidance provided by the principles of tax fairness with other desired objectives of the particular tax measure (e.g. its regulatory goal), meaning that the former may constitute justification to deviate from the latter (Gribnau 2003, 29–30).

Further to this point, critics of preferential schemes often emphasize that their actual behavioural effects are uncertain, meaning that the effectiveness of attracting mobile migrants, as an overarching justification for the introduction of the scheme, is questionable and may be difficult to prove empirically (Li 2009, 54). In other words, due to a number of other factors that affect location decisions, mobile individuals may not respond to the preferential regime as expected by the authorities in the state of destination.<sup>28</sup> Even individuals who decide to relocate to the country may leave when the time limitations of the scheme are reached. In any case, there may be better, less distortive alternatives that pursue similar migration-related goals, including those outside of the ambit of the tax system, e.g. more targeted public investments in education or training (OECD 2011, 136–137).

Finally, it must be accepted that any introduction of a special regime that deviates from the ordinary system of taxation in the country raises the overall level of tax complexity and may therefore bring about

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<sup>27</sup> For a general discussion on the importance of these principles in the context of taxation, see, for example, Gribnau (2003).

<sup>28</sup> For an empirical study see Kleven *et al.* (2019).



new administrative and compliance costs. This point is related to the above-discussed design features of a particular preferential regime for HSWs, since it would be difficult to legislate a well-targeted facility in simple legal language (Li 2009, 55).

#### 4. CROATIAN EXPERIENCE AND POTENTIAL POLICY DIRECTIONS

The preceding section provided a general overview of the tax instruments that may be used on the domestic level to tackle brain drain. Against this backdrop, and taking into account relevant tax policy objectives, some lessons from cross-country experiences may be drawn and applied to the particular case of Croatian brain drain, which has been described in Section 2. Since the main aim of the present paper is to explore potential tax policy measures the Croatian legislator may employ in addressing present migration and demographic trends, with a particular emphasis on HSWs, this section proceeds with the analysis of pertinent developments hitherto and proposes building blocks for a new, coherent approach.

As to the last point, it is presumed that Croatian policymakers want to assume a more proactive role in alleviating socio-economic pressures resulting from the troubling rates of immigration of younger, highly-skilled workforce.<sup>29</sup> The following discussion is fruitless and may be dismissed as academic daydreaming if the governing elites continue with a largely passive approach to global migration flows. It must be noted in this regard that Croatia is yet to adopt a new, comprehensive demographic strategy on the national level, even if some of the measures discussed at the level of official expert groups have been leaked to the general public. Admittedly, negative demographic prospects have been explicitly acknowledged and highlighted as one of the major pressure areas in several strategic documents issued recently by the central government (Government of the Republic of Croatia 2019a, 48–49; Government of the Republic of Croatia 2019b, 38–47). However, the envisaged measures for addressing these concerns have been limited to areas such as the institutional support for infants and pre-school children, maternal leave and parental benefits, etc., with no explicit reference being made to the role of taxation (Government of the Republic of Croatia 2019a, 48–49).

Accordingly, it comes as no surprise that none of the measures discussed in Section 3 as tools of anti-brain drain tax policy have been featured in the Croatian tax system since its inception at the beginning of

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<sup>29</sup> On the necessity of a more proactive demographic policy in Croatia see, for example, Jurun, Ratković, Ujević (2017).

the 1990s. Even if income is traditionally taxed on a worldwide basis, there has been no serious attempt to employ a departure tax regime for individuals, with the only major tax concern for permanent emigrants being the regulation of their residence status.<sup>30</sup> Such an idea has not come to the fore even though an exit tax will be introduced in the area of corporate taxation, starting 1 January 2020, as a result of the necessity to implement the rules from the EU Anti-Tax Avoidance Directive.<sup>31</sup> Therefore, the Croatian tax system is largely neutral to the act of individuals' emigration from the country – including HSWs – with no special provisions other than the general framework on taxation of income, aimed at disincentivizing such location choices.

Likewise, there are no preferential tax schemes in the Croatian tax system provided to highly-skilled immigrants, including potential returnees. Any immigrant has to take into account the general rules on income taxation in order to determine her tax burden post-migration, including the worldwide-based taxation of resident taxpayers.

#### 4.1. The New Preferential Regime for 'Young Workers': A Well-Intended, but Misdirected Tax Instrument?

Quite interestingly, it was only in 2019 that the capacity of tax policy to respond to migration concerns was explicitly acknowledged. Namely, at the time of writing, a new, migration-related tax measure was in the legislative pipeline: the proposed amendments of the Personal Income Tax Act (PITA)<sup>32</sup>, expected to enter into force on 1 January 2020, envisage introduction of the completely new preferential tax regime targeting young workers. More precisely, the proposed benefit takes the legal form of a tax credit in that a fixed percentage is to be subtracted from the tax liability on employment income, calculated under the general rules of personal income taxation. Taxpayers younger than 25 years are to be granted a 100% tax credit, meaning that they will effectively pay no tax on employment income. The second category of beneficiaries are

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<sup>30</sup> While the domestic rules on tax residence may be considered similar in nature to 'trailing taxes' (Beretta 2018, 17–18), they are not left out of the analysis in the present paper, since it is difficult to see a genuine connection with the brain drain phenomenon here.

<sup>31</sup> See Council Directive (EU) 2016/1164 of 12 July 2016 laying down rules against tax avoidance practices that directly affect the functioning of the internal market, OJ L 193 of 19 July 2016. It is interesting to note that Poland made the choice to extend the exit tax provisions of the ATAD also vis-à-vis individuals. See <https://assets.kpmg/content/dam/kpmg/pl/pdf/2018/09/pl-en-tax-alert-KPMG-2018-09-12-taxation-of-unrealized-capital-gains-exit-tax.pdf> (last visited 31 October 2019).

<sup>32</sup> *Official Gazette of the Republic of Croatia*, 115/2016 and 106/2018. The proposed legislative amendments, together with public comments, are available at <https://esavjetovanja.gov.hr/ECon/MainScreen?entityId=12039> (last visited 31 October 2019).

individuals aged 25–30, who are granted a 50% credit in regard to the tax liability on employment income.

In the explanatory text accompanying the bill, the Government explicates the policy underlying this new preferential scheme. In short, by reduction of the tax wedge in regard to young workers' wages, and the corresponding increase in their net disposable income, young and highly-skilled people are given an incentive to stay in Croatia, instead of moving to other countries. Furthermore, the Government explicitly acknowledges the demographic aim of the proposed scheme, without providing any detailed impact assessment or explaining the expected causality.

Evidently, the introduction of this regime is based on the assumption that cross-country wage differentials indeed have a big impact on the location decisions of younger migrants.<sup>33</sup> In terms of the dichotomy between defensive and offensive anti-brain drain tax measures, discussed in Section 3 above, the new scheme displays mostly defensive or protective characteristics. Namely, while it does not impose a new tax burden on individuals' departure from Croatia, as is the case with an exit tax regime, it acts as a tax disincentive to emigration at the expense of the public coffers. In doing so, it is aimed at primarily preserving the existing tax base within Croatia's taxing powers. Conversely, it is difficult to imagine how the new regime may induce immigration to Croatia, particularly due to the relatively low age thresholds limiting its subjective scope. Since the scheme will apply to all workers below the specified age limit, it does not target immigration, including the return of expatriates to Croatia. Quite interestingly, the only other country in Europe that currently applies a similar preferential tax regime for young workers is Poland. Whether the Polish regime – targeting workers below the age of 26, and in effect since 1 August 2019 – inspired the legislative developments in Croatia, remains unanswered at the present time.

The proposed scheme for young workers has been subject to heavy public criticism in Croatia ever since its announcement. First, the predicted behavioural effects of the scheme have been contested from several standpoints. For example, while the Government is apparently convinced of its immediate effects on the level of net salaries, the possibility remains that the reduced tax wedge will be simply soaked up by the employer, thus leaving the net amounts flowing to the employees intact. Even if net salaries do indeed increase as a result of these legislative changes, it is debatable whether its effect will be substantial enough to affect young people's decision on whether to migrate. Namely, it may be reasonably assumed that most young workers, particularly those under the age of 25, have relatively low earnings and are thus not heavily burdened by the personal income tax. Furthermore, a simple calculation shows that an

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<sup>33</sup> See above, note 2 and the accompanying text.

individual without children, aged 27 and earning the average salary in Croatia, will experience an increase in the monthly disposable income of around 55 EUR. Such benefit does very little to compensate for huge wage differentials between Croatia and the EU Member States that are most popular destination countries for Croatian migrants (i.e. Germany, Austria, Ireland, Sweden). Moreover, the new regime does not provide any answers to the vexing question of whether beneficiaries will leave the country once the preferential regime expires, i.e. when a person turns 31 years of age. Whether some type of recapture or claw-back rules are warranted in this respect is discussed below (Section 4.2).

The second line of criticism is related to the target of the measure. Due to relatively low age thresholds, the regime does not target the population in the 30–39 age group, even though this segment of the population, in prime age regarding fertility and work, constitutes a large share of the emigrants in recent years (Croatian Bureau of Statistics 2019a). Moreover, it must be noted that, unlike most preferential regimes for immigrants discussed above (Section 3.2), there are no skill requirements for the beneficiaries. If the aim of the scheme is to influence migration decisions of HSWs, then the age thresholds are set rather poorly, since individuals with a tertiary education enter the labour market at the age of 23–24 at the earliest.

Third, it has been suggested that the scheme should be deemed unconstitutional, particularly in light of the constitutional prohibition of discrimination (Article 14 of the Constitution of Croatia)<sup>34</sup> and the principles of equality and equity in taxation, embodied in Article 51 of the Constitution. Regarding the discrimination objection, the envisaged scheme targeted at ‘young employees’ undeniably causes unequal tax treatment on the basis of age, which is one of the protected grounds of discrimination, even though not explicitly listed in Art. 14(1) of the Constitution.<sup>35</sup> However, on its own, this may not lead to the conclusion on constitutionally prohibited discrimination, since one has to take into account the justifications and policy objectives underlying the rules in question. Namely, the case law of the Croatian Constitutional Court (Ustavni sud Republike Hrvatske) has affirmed that the legislator has a wide margin of appreciation in setting economic and social policy, including tax policy.<sup>36</sup> Accordingly, unequal treatment produced by tax

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<sup>34</sup> *Official Gazette of the Republic of Croatia*, 56/90, 135/97, 8/98, 113/00, 124/00, 28/01, 41/01, 55/01, 76/10, 85/10 and 05/14.

<sup>35</sup> However, age is directly referred to among discriminatory grounds in Article 1(1) of the Anti-Discrimination Act (*Official Gazette of the Republic of Croatia*, 85/2008 and 112/2012). More on this, see Omejec (2009, 883–886).

<sup>36</sup> See, for example, decision of the Constitutional Court of the Republic of Croatia, U-IP/3820/2009, 17 November 2009, para. 10. For a general discussion see Bagić (2016, 324–325).

rules may be justified by some legitimate objectives that these rules aim to achieve. As regards various tax benefits – such as the preferential regime discussed here – substantial legislative leeway has been confirmed in the jurisprudence of the Constitutional Court, provided that such provisions are underpinned by reasonable justifications.<sup>37</sup> In other words, tax benefits lay outside of the scope of the constitutional review, as long as they are not arbitrary and unsubstantiated by legitimate policy reasons. Turning attention back to the ‘young employees’ scheme’, it seems clear that while the choice of the age criterion, along with the exact thresholds prescribed in the law, may be derived from the policy perspective, it does not render the scheme entirely arbitrary and thus unconstitutional *per se*. Namely, the claims of the Government that the scheme serves useful social and economic objectives, particularly from the demographic viewpoint, will be probably adjudged by the Constitutional Court as rational considerations of a sufficient degree to pass the prospective constitutional review. A similar conclusion may be reached from the perspective of Article 51 of the Constitution.<sup>38</sup> Here the case-law of the Constitutional Court again confirms a wide margin of appreciation left to the legislator in deciding which facts are relevant in regulating the distribution of the tax burden between taxpayers: as long as a rational ground is provided for the tax classification or the differentiation enshrined in the law, corresponding at least partly to the abstract notion of justice, there is no arbitrariness leading to the conclusion that the constitutional principles of equality and equity are infringed.<sup>39</sup> As previously noted, the policy justifications provided in the Government’s bill, amending the Personal Income Tax Act regarding the preferential treatment of young workers, are not to be easily dismissed from this perspective inherent to Article 51 of the Constitution.

Finally, there is a familiar concern that the introduction of the special scheme will add yet another layer of administrative complexity to the Croatian tax system, with the greatest burden falling on the small and medium enterprises, acting as employers. As noted in the above discussion on preferential schemes for HSWs (Section 3.2), there is no real way around this argument, since any deviation from the ordinary system of taxation brings forth additional administrative and compliance costs. The tough question for the policymakers then is whether these costs can be justified by the underlying policy objectives of the scheme at hand.

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<sup>37</sup> Decision of the Constitutional Court of the Republic of Croatia, U-IP/3820/2009, 17 November 2009, para. 10.

<sup>38</sup> For a general discussion on the Article 51 of the Croatian Constitution, see Arbutina (2012, 1285–1296)

<sup>39</sup> Decision of the Constitutional Court of the Republic of Croatia, U-IP/3820/2009, 17 November 2009, para. 15.4.

To sum up, it is difficult to see how the proposed regime for young employees may be a success story. Its shortcomings from the policy perspective outnumber its potential gains and the Croatian legislator would be well-advised to opt for alternative instruments to tackle brain drain. Most importantly, these measures should form part of a coherent policy, as deliberated below (Section 4.2). On the other hand, one may have sympathy for the policymakers' desire to come up with a quick fix to a conundrum that reaches far outside the ambit of purely tax domain, or even the economic, for that matter. This is an important point to make, since it signals that there is finally an understanding within the governing elites that the time has come to take a more proactive position vis-à-vis migration flows.

#### 4.2. A Look at the Future: The Basic Tenets of a Coherent anti-brain Drain Tax Policy

In conceptualizing potential solutions to the brain drain problem, and proposing a particular path of action to Croatian policymakers, one must have a good grip on the following facts informing the policy debate:

*i. The socio-economic underpinnings of emigration and brain drain:* In essence, every regulatory tax measure – such as those discussed in the present paper (see above, Section 3) – has to be based on a fundamental understanding of the situation that requires state intervention. In this regard, the main determinants, magnitude, and effects of the Croatian brain drain have been laid out in Section 2 above. It is evident that the problem mainly boils down to younger (i.e. under the age of 40) and highly-skilled people permanently leaving the country, particularly in the post-EU accession period. Emigration of people with tertiary education seems particularly worrying if one takes into account the education and training costs heavily subsidized from the public purse. For example, according to one estimate, 2 billion EUR has been spent by the government on educating people who have emigrated in the 2013–2017 period.<sup>40</sup> Furthermore, emigration concerns seem to be more pressing as regards certain professions, such as healthcare workers, IT experts, and other employees educated in the wider field of Science, Technology, Engineering and Mathematics (STEM). This mostly has to do with the fact that these professionals face lower barriers when entering labour markets in other countries and are especially coveted in those EU Member States that are traditional destinations for Croatian emigrants (e.g. Germany). Special attention has to be paid to the category of so-called knowledge workers. While there is no ubiquitous definition of this term, they generally include

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<sup>40</sup> See <https://prviplan.hr/aktualno/koliko-nas-kosta-odljev-mozgova/> (last visited November 1<sup>st</sup> 2019).

all individuals with “high degrees of expertise, education, or experience, and the primary purpose of their jobs involves the creation, distribution, or application of knowledge” (Davenport 2005, 10). Accordingly, the term encompasses scientists, researchers, engineers, programmers, and other workers whose knowledge is essential in bringing about innovation, having positive spillovers on the economy as a whole. In this respect, it has to be emphasized that Croatia lags behind other EU countries in terms of innovation, being labelled as a “moderate innovator”, leaving behind only Bulgaria and Romania (European Commission 2019a, 7). Even more worryingly, Croatia is the worst performing Member State when it comes to exports of knowledge-intensive services and is well below the EU average regarding human resources, i.e. the availability of a high-skilled and educated workforce (European Commission 2019a, 53). The latter finding has been confirmed in the latest Global Competitiveness Report, noting that the skill set of graduates, the percentage of the active population apt in digital skills, and the ease of finding skilled employees all amount to weaknesses of the Croatian economy (World Economic Forum 2019, 176).<sup>41</sup> The orientation to improve the innovation climate in the near future times ahead has been acknowledged by the domestic policymakers, with an explicit reference to the role of relevant human resources (Government of the Republic of Croatia 2019a, 58–62). The attainment of this goal is undoubtedly under threat if the current trends in emigration of knowledge workers continue, with no real policy on how to possibly induce previous emigrants to return to the country.

*ii. The fundamentals of the Croatian tax system:* It must be acknowledged that any tax measure targeting brain drain has to fit within the domestic framework of taxing income. Accordingly, a deep understanding of the current rules regarding taxable income, computation of the tax base, tax rate schedule, tax exemptions and privileges, etc., is necessary to choose a particular path of action, if any. All of these elements determine the effective tax burden on labour, which is assumed to influence the individuals’ location decision. In this respect, it must be noted that the tax wedge on low-wage earners in Croatia stands at 33.7% and is below the EU average (38.2%), but still much higher than in Ireland (24.2%) or United Kingdom (26.1%) (Eurostat 2019b).<sup>42</sup> Even more importantly for the globally mobile knowledge workers, the top marginal tax rate, including statutory personal income tax rate and surcharges, stands at 42.5%, which is higher than the EU average (39.4%) and seems

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<sup>41</sup> Compare also the findings on Croatia in Cornell University, INSEAD, WIPO (2019).

<sup>42</sup> It must be taken into account that this indicator measures the tax wedge for an individual without children, earning 67% of the average salary in the country’s business sector.

particularly high compared to the top rates in the new Member States, such as Hungary, Poland, Romania, Latvia, and Slovakia (European Commission 2019b, 26). Put simply, while Croatia is definitely not a high-tax country<sup>43</sup>, its ordinary system of taxing employment income is not competitive vis-à-vis high earners, with a significant portion of high-skilled workers falling in this category (e.g. IT experts).

*iii. Comparative trends with regard to personal income tax and migration-related measures:* In the international competition-based setting, domestic legislators must to pay attention to the global developments in order to improve their competitive position for mobile tax bases. Global trends show that a number of countries have introduced changes to their systems of taxing personal income by either cutting nominal rates or narrowing the tax base (OECD 2019). The latter point is particularly important, since base-narrowing reforms are usually underpinned by specific redistribution and regulatory objectives. This logic may also apply to tax measures targeting migrating knowledge workers, such as the preferential regimes discussed earlier in the paper (Section 3.2).

*iv. The EU law dimension:* Any prospective tax measure introduced at the domestic level should comply with EU law requirements. While the regulation of individual income tax still remains firmly in the hands of national legislators, with a severely limited role of the EU institutions, domestic rules should not run afoul of the primary EU law, i.e. the provisions enshrined in the EU treaties, such as the rights to free movement within the internal market.<sup>44</sup> In this respect, imposition of a departure tax regime (e.g. a *strictu sensu* exit tax) raises more concerns, since it directly impedes the free movement of labour. However, the jurisprudence of the European Court of Justice (ECJ) has confirmed that the imposition of a tax on the act of individual's emigration may be a justified restriction, provided that the design of the scheme passes the proportionality test.<sup>45</sup> On the other hand, the compatibility of preferential tax regimes granted to mobile individuals with EU law, even if objectionable from the internal market perspective, has hitherto not been under serious scrutiny and thus remains a *domaine réservé* of the individual Member States.<sup>46</sup>

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<sup>43</sup> According to the latest data compiled by the European Commission (2019b, 15), Croatia ranks 13<sup>th</sup> in the EU with regard to the overall tax burden (including social security contributions), relative to the domestic GDP. What is particularly striking is that the only new Member State with a higher tax burden than Croatia is Hungary.

<sup>44</sup> For a general overview see Beretta (2018, 40–43).

<sup>45</sup> Further analysis of the ECJ's case-law remains outside of the scope of this paper. See Terra, Wattel (2012, 957–962).

<sup>46</sup> Compare the discussion in Beretta (2018, 47–51).



Against this backdrop, the remainder of this section presents the main policy recommendations reflecting the views of the author on the particular case of Croatia:

i. Introduction of defensive measures, taking the form of either an exit tax *strictu sensu* or a ‘trailing tax’, is not advisable, since the normative disadvantages of such tax schemes outweigh the potential behavioural impacts and other potential justifications (e.g. the benefits principle). Most importantly, the effect of the exit tax regime on the emigration decision would be greatly diminished due to EU law limitations regarding its exact design, rendering the whole exercise an unnecessary waste of tax authorities’ and taxpayers’ resources.

ii. Conversely, there is some merit to introducing special provisions on ‘recapture’ or ‘claw-back’ regarding previously enjoyed tax benefits. This point is particularly important if policymakers decide to employ preferential regimes for young and/or highly-skilled individuals. As seen from the preceding discussion in this section, one such scheme targeting ‘young employees’ is currently in the legislative procedure in Croatia and is expected to come into force in 2020. Since one of the main objections to this scheme is that it fails to address the migration decision of the beneficiaries once they turn 31 years of age, the legislator may decide to back up the scheme with a protective claw-back provision. For example, one could prescribe that the beneficiaries of the scheme who decide to emigrate must repay the amount of benefit previously enjoyed. It has to be noted that in drawing up such a rule, the EU law requirements – particularly ECJ’s case law on exit taxation – must be taken into account. Accordingly, recapture should not in all likelihood entail an order for an intra-EU migrant to immediately repay the full amount of benefits received.

iii. Whether Croatia needs a special, preferential regime for highly-skilled immigrants, including returning expatriates, remains the most difficult question to answer here. While the author believes that other, general tax measures aimed at strengthening Croatian tax competitiveness are more desirable from a purely theoretical perspective, one has to acknowledge that the current state of affairs regarding demography and migration may call for some quicker, even if less than perfect solutions. In the author’s opinion, a well-designed preferential scheme for immigrants and returnee citizens has in any case numerous advantages over the proposed ‘young employees’ scheme. As stated by Brauner (2010, 266), “(...) The basic idea here is to design tax incentives that will encourage behavior beneficial for development in the context of the brain drain. Tax incentives can and should target specific, well-defined, and isolated

behavior.” Indeed, if one connects this argument with the Croatian specificities laid out above, it seems that the prospective preferential tax scheme should have a very limited subjective scope. Namely, against the backdrop of the preceding discussion on the importance of innovations for the economic development of the country and the role of knowledge workers in this regard, preferential regime should target only those professionals possessing crucial skills and expertise in increasing the overall level of innovation. Moreover, the situation in the domestic labour market should play a part in defining the targeted population and making tax-relevant classifications. Some comparative practices may lend a hand in this respect, e.g. the Korean scheme targeted exclusively employees in the high-tech sector (OECD 2011, 144). Regarding the objective scope of the preferential scheme, it would be desirable to extend the benefit to both employment and self-employment income earned in Croatia post-immigration, including foreign-sourced capital income that Croatia may have the right to tax, to further increase the attractiveness of the programme. In any case, preferential tax treatment should be temporary, with a five-year limitation seeming reasonable. This is important to mitigate the impact of the scheme on the overall equity of the tax system. As already pointed out above, any new preferential regime should be accompanied by a claw-back rule vis-à-vis the benefits granted to the migrant.<sup>47</sup>

iv. If one stays within the ambit of personal income tax, there are definitely other options, with a more general scope of application, that seem viable in alleviating the migration-related pressures. In this respect it appears that Croatian policymakers are aware of the global trends and recent years have seen a gradual decrease of the effective tax burden on employment income. However, the tax wedge still remains comparably high, particularly for highly-skilled and highly-mobile individuals earning above-average salaries. Accordingly, a reform of the tax rate schedule should be considered in the mid-term. Furthermore, the system of taxing fringe benefits has also been recently reformed, with an increase of tax-exempt amounts.<sup>48</sup> It still, however, remains relatively rigid in comparison with other EU Member States. One legislative change in the right direction, albeit with a limited scope, has come into force on 1 January 2019, with the introduction of a new, more tax-efficient way for companies to provide stock options to their employees.<sup>49</sup> Since stock option models are a standard way of remunerating workers in the most innovative business sectors, e.g. the IT industry, this change may be adjudged as well-targeted for the category of workers generally highly responsive to cross-country wage differentials.<sup>50</sup>

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<sup>47</sup> For an Italian example regarding the claw-back rule see Beretta (2018, 18).

<sup>48</sup> For an overview see Pezo (2019).

<sup>49</sup> See Božina, Wagner (2019, 31).

<sup>50</sup> Compare also the discussion in OECD (2011, 142).

v. Furthermore, it must be acknowledged that there are other areas of the tax system with at least indirect effects on migration decisions of the HSWs, mainly by creating a more competitive tax environment for enterprises engaged in the knowledge-based economy. In this respect it has to be noted that one of the measures envisaged in the Government's tax package, currently in the legislative pipeline and expected to come into force next year, relates to the extension of a lower corporate income tax rate (12%) to all enterprises with an annual turnover up to 1 million EUR. It is thus expected that more than 90% of small corporate taxpayers pay this rather competitive tax rate, which also provided an additional stimulus for the development of the knowledge-intensive start-up sector. While the recent changes in the Croatian tax system are aligned with the global trends of steadily reducing tax burdens on labour and capital, there are certainly some specific instruments the legislator may additionally employ in order to improve the investment climate in innovation-based industries. A number of countries have recently expanded the use of R&D tax incentives (OECD 2019). In this respect an interesting example relevant for knowledge workers comes from Italy, which offers tax credits for corporate taxpayers related to the costs of employee training on 'Industry 4.0' topics. Taken at face value, this seems like a good example of how to simultaneously provide tax benefits to enterprises engaged in the new economy and incentivize improvements of the domestic workforce's relevant skills. One can also contemplate whether Croatia needs a 'patent box' or 'intellectual property box scheme', i.e. a preferential corporate tax regime offered to companies engaged in the development of relevant intangible assets.

vi. Finally, one has to understand that taxation has a severely limited role regarding brain drain. A number of studies have shown that young, highly-skilled people emigrate from Croatia driven by various non-economic factors, including, *inter alia*, the perception of corruption within the society (see Section 2 above). This necessarily calls for a further strengthening of the overall institutional framework in the country. In this respect the tax system – however complex it may seem – is only a small piece of a complex socio-economic mosaic that must aim to improve the overall well-being of the population. For example, if one focuses again on the young and highly-skilled, it is pretty evident that reforms in the education system – more aligned with the conditions in the domestic labour market – may have a more far-reaching impact on the reversal of migration patterns in the long run than piecemeal state interventions regarding net disposable income. Perhaps even more importantly, if Croatia wants to not only prevent further outflow of its top talent, but also to reap the benefits of the 'brain circulation' concept, a coherent set of measures aimed at returnee expatriates and their reintegration into society has to be devised (Vračić 2018, 11–14).

## 5. CONCLUSION

At the end of the Twenty-Tens, Croatian society is at a crossroads: the governing elites have to decide whether to resign themselves to the role of passive onlookers of the current adverse demographic and migration trends – threatening to tear apart the very socio-economic fabric of the country in the long run – or to adopt a more proactive approach and formulate a set of appropriate policy responses, ranging across different pressure areas. The analysis in this paper shows that, unfortunately, the role of taxes and tax policy in this regard has not been seriously acknowledged hitherto, even if many other jurisdictions have reacted to the global migration of individuals by introducing special tax rules at the domestic level. Admittedly, one may note that a turning point was reached in the autumn of 2019, i.e. at the time of writing this paper, when the proposal to introduce a preferential tax scheme for ‘young workers’ was brought to the legislative process.

Against this background, the present paper tried to lay out potential tax policy responses to the actual brain drain situation in Croatia, with particular emphasis on highly-skilled workers (or knowledge workers). Its main contribution lies in identifying the main building blocks of a coherent anti-brain drain tax policy, on the basis of both cross-country experiences and relevant economic and legal principles of taxation. What emerges from the paper is that while targeted measures, such as a preferential regime for immigrants and/or returnees, may be problematic from a theoretical standpoint – with horizontal measures providing a better long-term alternative – the magnitude and the structure of emigration from Croatia may warrant some sort of a quick-fix solution. Accordingly, it has been suggested that policymakers may opt for the introduction of a preferential scheme for HSWs, with the main design conundrum being how to draw up proper targeting rules. In any case, the author shares the view that such a migration-related tax instrument has numerous advantages over the proposed ‘young workers’ scheme, mainly due to the extremely uncertain behavioural effects of the latter. Hope remains that the future debate will refine this or some alternative, and possibly more appropriate, policy approach.

## REFERENCES

- Arbutina, Hrvoje. 2012. Ustavna i nadnacionalna ograničenja ovlaštenja na oporezivanje. *Zbornik Pravnog fakulteta u Zagrebu* 62: 1283–1322.

- Arsenault, Steven J. 2009. Surviving a Heart Attack: Expatriation and the Tax Policy Implications of the New Exit Tax. *Akron Tax Journal* 24: 37–67.
- Avi-Yonah, Reuven S. 2006. The Three Goals of Taxation, *Tax Law Review* 60: 1–28.
- Bagić, Snježana. 2016. *Načelo razmjernosti u praksi europskih sudova i hrvatskog ustavnog suda (s posebnim osvrtom na vlasništvo)*. Zagreb: Pravni fakultet Sveučilišta u Zagrebu.
- Beretta, Giorgio. 2018. Mobility of Individuals and Taxation, *IFA Research Paper 2017/2018*.
- Božina, Anja, Anamarija Wagner. 2019. Novosti u obračunu doprinosa i poreza na dohodak u 2019. godini. *Pravo i porezi* 21: 30–37.
- Brauner, Yariv. 2010. Brain Drain Taxation as Development Policy. *St. Louis University Law Journal* 55: 221–268.
- Brock, Gillian. 2015. What Does Global, Justice Require?. in *Debating Brain Drain. May Governments Restrict Emigration?*, edited by Gillian Brock, Michael Blake. New York: Oxford University Press.
- Casarico, Alessandra, Silke Übelmesser. 2018. Migration Policies and the Highly Skilled. *ifo DICE Report* 16: 28–33.
- Chand, Vikram. 2013. Exit Charges for Migrating Individuals and Companies: Comparative and Tax Treaty Analysis. *Bulletin for International Taxation* 67.
- Cornell University, INSEAD, WIPO. 2019. *The Global Innovation Index 2019: Creating Healthy Lives – The Future of Medical Innovation*. Ithaca – Fontainebleau – Geneva.
- Croatian Bureau of Statistics. 2019a. Migration of Population of Republic of Croatia, 2018. [https://www.dzs.hr/Hrv\\_Eng/publication/2019/07-01-02\\_01\\_2019.htm](https://www.dzs.hr/Hrv_Eng/publication/2019/07-01-02_01_2019.htm) (last visited 1 November 2019).
- Croatian Bureau of Statistics. 2019b. Natural change in population in the Republic of Croatia. [https://www.dzs.hr/Hrv\\_Eng/publication/2019/07-01-01\\_01\\_2019.htm](https://www.dzs.hr/Hrv_Eng/publication/2019/07-01-01_01_2019.htm) (last visited 1 November 2019).
- Davenport, Thomas H. 2005. *Thinking for a Living: How to Get Better Performance and Results from Knowledge Workers*. Boston: Harvard Business School Press.
- De Broe, Luc. 2002. General Report. in *The Tax Treatment of Transfer of Residence by Individuals*. IFA Cahiers 2002 – 87B.
- Del Carpio, Ximena V., Caglar Ozden, Mauro Testaverde, Mathis Wagner. 2016. *Global migration of talent and tax incentives: Evidence from Malaysia's returning expert program*. Washington, D.C.: World Bank Group, Development Research Group, Trade and International Integration Team.

- Dietsch, Peter. 2015. *Catching Capital: The Ethics of Tax Competition*. Oxford: Oxford University Press.
- Dražević, Ivana, Marina Kunovac, Dominik Pripuzić. 2018. Dynamics and determinants of emigration: The case of Croatia and the experience of new EU member states. *Public Sector Economics* 42: 415–447.
- European Commission. 2019a. *European Innovation Scoreboard 2019*. Luxembourg: Publications Office of the European Union.
- European Commission. 2019b. *Taxation Trends in the European Union: Data for the EU Member States and Norway*. Luxembourg: Publications Office of the European Union.
- European Committee of the Regions. 2018. Addressing brain drain: the local and regional dimension. <https://cor.europa.eu/en/engage/studies/Documents/ex-sum-addressing-brain-drain/ex-sum-addressing-brain-drain-EN.pdf> (last visited 30 October 2019).
- Eurostat. 2019a. *Ageing Europe – 2019 edition*. Luxembourg: Publications Office of the European Union.
- Eurostat. 2019b. Wages and labour costs. [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Wages\\_and\\_labour\\_costs#Net\\_earnings\\_and\\_tax\\_burden](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Wages_and_labour_costs#Net_earnings_and_tax_burden) (last visited 2 November 2019).
- Faulhaber, Lilian V. 2018. The Trouble with Tax Competition: From Practice to Theory. *Tax Law Review* 71: 311–366.
- Gadžo, Stjepan. 2018. *Nexus Requirements for Taxation of Non-Residents' Business Income: A Normative Evaluation in the Context of the Global Economy*. Amsterdam: IBFD.
- Gelo, Jakov, Akrap, Anđelko, Čipin, Ivan. 2005. *Temeljne značajke demografskog razvoja Hrvatske – Bilanca 20. stoljeća*. Zagreb: Ministry of Family Affairs, War Veterans and Intergenerational Solidarity.
- Government of the Republic of Croatia. 2019a. National Reform Programme 2019. <https://vlada.gov.hr/UserDocsImages/Vijesti/2019/04%20Travanj/30%20travnja/NRP%202019%20i%20Odluka%20Vlade/NRP%202019%20english/National%20reform%20programme%202019.pdf> (last visited 1 November 2019).
- Government of the Republic of Croatia. 2019b. Convergence programme of the Republic of Croatia for the period 2019 – 2022. <http://www.mfin.hr/adminmax/docs/Convergence%20programme%20of%20the%20Republic%20of%20Croatia%20for%20the%20period%202019%20-%202022.pdf> (last visited 1 November 2019).
- Gribnau, Hans. 2003. Equality, Consistency, and Impartiality in Tax Legislation. *Legal Protection against Discriminatory Tax Legislation: The Struggle for Equality in European Tax Law*, edited by Hans Gribnau. The Hague: Kluwer Law International.

- Jurić, Tado. 2017. Suvremeno iseljavanje Hrvata u Njemačku: Karakteristike i motivi. *Migracijske i etničke teme* 33: 337–371.
- Jurun, Elza, Nada Ratković, Ivana Ujević. 2017. A cluster analysis of Croatian counties as the base for an active demographic policy. *Croatian Operational Research Review* 8: 221–236.
- Kleven, Henrik, Camille Landais, Mathilde Munoz, Stefanie Stantcheva. 2019. Taxation and Migration: Evidence and Policy Implications. NBER Working Paper No. w25740. <https://ssrn.com/abstract=3372036> (last visited 25 October 2019).
- Knezović, Sandro, Maja Grošinić. 2017. *Migration Trends in Croatia*. Zagreb: Hans Seidel Stiftung.
- Li, Jinyan. 2009. International Mobility of Highly Skilled Workers in the Canadian Context: Tax Barriers and Reform Options. Commissioned Reports, Studies and Public Policy Documents. Paper 55.
- Lister, Matthew J. 2017. A Tax-Credit Approach to Addressing Brain Drain (2017). *Saint Louis University Law Journal* 62: 73–84.
- Muñoz, Mathilde. 2019. Do European top earners react to labor taxation through mobility? WID.world Working Paper 2019/12. [https://wid.world/wp-content/uploads/2019/09/WID\\_WORKING\\_PAPER\\_2019\\_12\\_MigrationMobility.pdf](https://wid.world/wp-content/uploads/2019/09/WID_WORKING_PAPER_2019_12_MigrationMobility.pdf) (last visited 20 October 2019).
- OECD. 2011. *Taxation and Employment, OECD Tax Policy Studies, No. 21*. Paris: OECD Publishing. <https://doi.org/10.1787/9789264120808-en> (last visited 2 November 2019).
- OECD. 2019. *Tax Policy Reforms 2019: OECD and Selected Partner Economies*. Paris: OECD Publishing.
- Omejec, Jasna 2009. Zabrana diskriminacije u praksi Europskog suda za ljudska prava. *Zbornik Pravnog fakulteta u Zagrebu* 59: 873–979.
- Pezo, Sandra. 2019. Topli obrok, naknada za smještaj i ostali (ne)oporezivi primitci radnika. *RRIF* 22: 11–16.
- Terra, Ben, Peter J. Wattel. 2012. *European Tax Law*. Alphen aan den Rijn: Kluwer Law International.
- United Nations, Department of Economic and Social Affairs, Population Division. 2017. *International Migration Policies: Data Booklet (ST/ESA/SER.A/395)*.
- United Nations, Department of Economic and Social Affairs, Population Division. 2019. *World Population Prospects 2019: Highlights (ST/ESA/SER.A/423)*.
- Vračić, Alida. 2018. The Way Back: Brain Drain and Prosperity in the Western Balkans. [https://www.ecfr.eu/publications/summary/the\\_way\\_back\\_brain\\_drain\\_and\\_prosperiy\\_in\\_the\\_western\\_balkans](https://www.ecfr.eu/publications/summary/the_way_back_brain_drain_and_prosperiy_in_the_western_balkans) (last visited 20 October 2019).

Wong, Kar Yiu. 2009. Brain Drain. in *The Princeton Encyclopedia of the World Economy*, edited by Kenneth A. Reinert, Ramkishen S. Rajan. Princeton: Princeton University Press.

World Economic Forum. 2019. *The Global Competitiveness Report 2019*. Geneva.

Župarić-Iljić, Drago. 2016. *Iseljavanje iz Republike Hrvatske nakon ulaska u Europsku uniju*. Zagreb: Friedrich-Ebert-Stiftung.

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