



Assaf Razin

Globalization, Migration, and Welfare State

Understanding the
Macroeconomic Trifecta

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Assaf Razin
Eitan Berglas School of Economics
Tel Aviv University
Tel Aviv, Israel

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*To my late parents who brought me up in a border communal Kibbutz on
the slopes of the Golan Heights*

PREFACE

The book is about three themes—globalization, migration and the welfare state—the interaction among them forms a “trifecta”: three good things happening at once (a “low probability” event).¹ The narrative is three-fold. (1) Globalization and migration are major productivity-enhancing phenomena, but countries in general cannot easily get them working, and the welfare state, to their full advantage; (2) Some globalized countries hit a well-functioning trifecta—Israel is a unique example, having a free-migration constitution, intensively globalized, and advanced redistribution systems; But, (3), federal systems, such as the European Union and the United States, have run into severe difficulties to hit the three good things together, because of lack of coordination in their multiple-tier systems and migration-policy challenges they face.

“History doesn’t repeat itself, but it often rhymes,” quipped Mark Twain. The idea of redistribution of wealth goes back to Biblical regulations. At the end of seven cycles of *Shmita* (Sabbatical years), in the *Jubilee*, is the year, in which slaves and prisoners would be freed, debts would be forgiven.

Likewise, the economic benefits of globalization—the ability to enjoy the products of many nations at a reasonable price and with minimal effort—is old. Ben Zoma, one of the Jewish *Tannaim*, of the 1st and 2nd

¹Originally, trifecta, a variation of the perfecta, is a phenomenon in which a bettor wins by selecting the first three finishers of a race in the correct order of finish.

centuries CE, knew how to appreciate these benefits. The Talmud relates: “Ben Zoma...used to say how much effort Adam had to invest in order to eat bread: he had to plow, sow, gather, heap, thresh, winnow, sort, sift, knead and bake. Only then could he eat. Yet, I wake up and find all of these prepared for me!...All the nations of the world go out of their way and come to my door step, and I wake up to find all these before me.” The benefits of free migration, however, had not been cherished in the ancient master-and-slave world.

WHAT MADE ME WANT TO INVESTIGATE THIS TOPIC?

In the recent past, I have attempted to take a crack at various, albeit somewhat scattered aspects of the macroeconomic trifecta: globalization, migration, and welfare-state. In this book, however, I am trying to synthesize key pieces of the analysis, and provide a broader view. At the entire post-WWII half century, globalization and migration have been on the march. The new economic world order was characterized with growing international economic integration in a multitude of economic, cultural and social dimensions.² Global economic integration took three key aspects: trade, finance, and migration. Trade-enhancing forces included the multi-lateral trade agreements reached under the auspices of the World Trade Organization (WTO), the regional trade agreements, such as the North America Free Trade Agreement (NAFTA) were effected, and bilateral trade agreements, such as the one between Switzerland and the European Union (the EU), and the one between Norway and the EU.

The Great Financial Recession of 2008–2010 marked, however, a historic turning point, which sharply weakened the extent of global economic integration.

MIGRATION AND WELFARE STATE

Evidently, migration raises the economic surplus that native born are sharing with incoming migrants. However, economic market forces, and political-economy forces, affect the allocation of the economic surplus in

²See my early treatise: *The Decline of the Welfare State: Political Economics of Demography and Globalization*, (with Efraim Sadka, 2005, MIT Press.)

ways that benefit some and are detrimental to others. Specifically, immigration of low skilled, with no capital of their own, depresses the wage income of the native-born poor, while raising both wage income, and capital income, of the native-born rich. Immigration of high skilled, in contrast, boosts the wage income of native-born poor but depresses the wage income of the native-born rich. But, there is an added consideration with regard to welfare-state redistribution, as it is financed by taxation. The immigration of low skilled poses fiscal burden on native born, both poor and rich. Therefore it tends to limit the social provision afforded by the welfare state to all. In contrast, immigration of high skilled, which could generate fiscal boon, enables enhanced provisions of social benefits.

Key issues are:

How the provision of social benefits in a representative welfare state changes when the economic regime of free migration, typically, transforms to a severely restricted-migration regime?

How the composition of capital and labor income tax rates alter with changes of the political-economic regime governed by different income classes?

Our analysis involves three-way comparisons: free-migration regime differentiated from restricted-migration regime, welfare-state regime, distinguished from free-market regime, and low-income majority assessed against high-income majority.

FUNCTIONING TRIFECTA: ISRAEL'S IMMIGRATION AND GLOBALIZATION EXPERIENCE

A functioning trifecta is illustrated thanks to the rather unique immigration policy of Israel. Recently, within a short time span in the early 1990s, Israel received hundreds of thousands of immigrants from the former Soviet Union, raising its population by almost 20 percent in less than a decade. The distinctive features are the absence of any restrictive immigration policy, and the relative ease of assimilation.

Israel also provides a case for how the macroeconomic stability policies were developed and reinforced by globalization. We focus on Israel's triumphant struggle with inflation, and its growth. The story begins with overcoming the early acceleration of the three-digit-level inflation, lasting 8 years; The macro-stabilization program, which become credible by a unity government, triggered sharp fall in inflationary expectations, and

consequently to sharp inflation reduction to two-digit levels; The convergence to the advanced countries' levels during the "great Moderation"; And Israel' resistance to the deflation-depression forces that the 2008 crisis created. Forces of globalization and the building of political, regulatory, financial, budget design, and monetary institutions, helped stabilize prices, output and welfare state institutions.

IMPERFECTLY FUNCTIONING TRIFECTA: EUROPE VS. THE US

The book elaborates on the specific hurdles for the mixture of globalization, welfare-state social provision, and immigration to function in federal systems. Malfunctions come from the lack of coordinations among political elements in the multi-tier system which distort migration policy, and the working of the welfare state due to tax-competition among states within the federation. In this vein, the book compares the generosity in providing social benefits, and the immigrant restrictive policy in the US, which is distinguished by a federal fiscal union, to that of the EU, which does not have federal fiscal union. In both federal systems, there is free labor mobility among states, but restricted labor mobility between the union states and the rest of the world.

THE UPS AND DOWNS OF GLOBALIZATION

In his 1919 book, *The Economic Consequences of the Peace*, John Maynard Keynes described the open borders of the then bygone first age of globalization before WWI: "The inhabitant of London could order by telephone, sipping his morning tea in bed, the various products of the whole earth, in such quantity as he might see fit, and reasonably expect their early delivery on his doorstep, he could at the same moment and by the same means adventure his wealth in the natural resources and new enterprises of any quarter of the world, [and] *he could secure forthwith, if he wished it, cheap and comfortable means of transit to any country or climate without passport or other formality.*" Globalization did reverse its course in the second period, from the outbreak of World War I in 1914 until the end of World War II in 1945. World War I produced prolonged economic dislocation, which included the withdrawal of Russia from world trade after the communist revolution in 1917, the Spanish flu pandemic

in 1918 and 1919, monetary instability in the early 1920s, new immigration restrictions, the Great Depression starting in 1929, and a severe outbreak of protectionism in the 1930s. Today, Health concerns are providing new rationales for protectionism, especially for international travel, medical gear and food, and a renewed emphasis on domestic sourcing. Value supply chains are highly vulnerable to pandemics because they are geographically vastly expanded. They are sensitive also to politically caused trade conflicts. Even prior to the Corona virus pandemic, trade globalization was challenged by a rising wave of populism spurred on by economic discontent in Europe, the United States, Latin America and elsewhere and a trade war between the US and China. The recent backlash against trade globalization is not a new phenomenon, either. International trade increased rapidly after 1990, fuelled by the growth of a complex network of global value chains (GVCs). These chains represent the process of ever-finer specialization and geographic fragmentation of production. Generally speaking, the higher the participation in intra-regional value chains, the higher the degree of regional economic integration. Likewise, the higher the degree of participation in inter-regional GVCs, the higher the degree of economic integration into the global economy. In the wake of the 2008 Global Financial Crisis, uncertainty in the world economy led many firms to reassess their business models. Rather than relying on global supply chains, an increasing number of firms invested in robots, which prompted a renaissance of manufacturing in industrialized countries. The GVCs could be reshuffled, or be reduced. Whether they will be localized or regionalized, or whether the crisis will lead to the continuation of globalization. A short period of Corona recession seems unavoidable, but the question is whether the increased frequency of pandemics in the twenty-first century crisis will structurally transform globalization in the long-term.

WHAT AREAS OF ECONOMICS ARE COVERED?

The book coverage encompasses several areas:

- (a) International Economics.

The text attempt to enrich the reader with international-economic theories with new twists, and empirical regularities.

(b) Analytical Book.

Macro economics and international economics in particular, have often evolved from historical episodes. With content rich in data and empirical evidence. Episode study of the small globalized economies and the federal systems of the EU and the US, provide guidance and lessons.

(c) Policy.

Open economies have grappled, policy-wisely, with the effects of external shocks, more recently the effects of the Global Financial Crisis and the Pandemic Crisis.

POTENTIAL READERSHIP

Potential readership of this book is a professional economics audience and interdisciplinary audience from political science and international relations. The book may be found to be also useful reading in courses for advanced undergraduate and graduate students in public economics, macroeconomics, and international economics, as well as research oriented divisions in central banks, treasury department, IMF, World Bank, OECD, and the likes.

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Tel Aviv, Israel
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Assaf Razin

PROLOGUE

The recent pandemic exposed the need for a far higher level of global cooperation than ever before. Cooperation is needed to manage the emerging global commons: climate change, pandemics, protection of intellectual property, and more. However, coordination failure on a global scale threatens to make any meaningful progress. What undermines progress is that globalization has been recently reversed, at least partially. A de-globalization trend is expected to be reinforced by the pandemic in the short run.

Weakening of trade globalization has been apparent since the 2008 global financial crisis. Since the end of World War II, the US, Europe, Australia, and Japan pushed for lower global trade barriers around the world.

Catão and Obstfeld (2019) observe that the early twentieth century was also an era of globalization. It took 60 years before economic integration returned to 1913 levels, relative to global output. Globalization then went far further, prior to the global financial crisis of 2008. The integration of markets in goods, services, and capital, whose pace accelerated in the 1990s with the fall of communism, the consolidation of Europe single market, and growing openness of China and India, is currently under attack in Europe and the US. The disintegration of the former Communist Block allowed full integration of Central Europe into the world economy. The fall of the Berlin wall brought up the unification of Germany. In the 2000s, both Russia and China became members of the WTO. Catão

and Obstfeld (2019) document that in the post WWII globalization process also brought about a large reduction in global inequality and mass poverty. However, within-country inequality rose sharply. Globalization triggers intense international tax competition, and, consequently, entails the extensive restructuring of the welfare state. Globalization and new-technology forces accelerated, however, the decline in low-tech manufacturing industries, the rise of the financial centers, and the surge in migration. Brexit may have been the first wave of anti-globalization and rising populism that gushes over most advanced nations. Then came the 2017 chaotic change of guards in the US. Meanwhile, European countries, straightjacketed inside the confines of the single currency area, like Germany, France, Netherland, Spain, Poland and others, witness the anti-EU forces gather strength.

Post-pandemic era, policymakers appear poised to take deliberate steps to reinforce the movement toward de-globalization. This is sure to have longer-term consequences.

However, US globalizing efforts reversed when recently it implemented tariffs on 12.7% of its imports, raising tariffs on targeted imports from an average of 2.6% to 16.6%, last years. Trade partners retaliated by targeting 8.2% of US exports, raising tariffs from an average of 7.3% to 20.4%, during last years. This de-globalization episode is the largest return to protectionism by the US since the 1930 Smoot-Hawley Act and the 1971 “Nixon shock” (Irwin 1998, Irwin 2013).³

Restrictions on the international mobility of people are arguably the single largest policy distortion that besets the international economy. A variety of studies suggests that even a small reduction in barriers to migration will result in large welfare benefits to the global economy. Unlike international trade in goods, or international financial flows, migration can change the decision-making policy in an economy. This is because population composition in terms of income, age, etc., can alter the power balance between the native-born and the newcomers in a way that changes the political-economic policy of the state. Nevertheless, despite the potential gains from easing restrictions on international labor mobility, countries do not pursue the liberalization of migration flows unilaterally, or through negotiations, in a way that international trade negotiations do. Why is this? Because politicians face a backlash against immigration.

³ See Fajgelbaum, Goldberg, Kennedy, and Khandelwal (2019).

Among several key explanations for political-economy based restrictions is fiscal burden imposed by immigration on the native-born, in the presence of generously redistributing welfare state. Back in 1883 in the US, the idea of the welfare state and the threat it would bring to free immigration was still in its embryonic state in Europe and had yet to be brought to the US shores. From one hundred years before to one hundred years after, economists have argued in favor of the free movement of peoples. In 1776, Adam Smith labeled the restriction on immigration as being just as debilitating as a restriction of capital movements. Toward the end of the twentieth century, Milton Friedman remarked that free immigration and a welfare state are mutually exclusive. A welfare state with open borders, he argued, might turn into a haven for the poor and needy from all over the world, draining its finances and bringing the welfare system to its knees.

In 2019 270 million people in the world were migrants, defined as individuals not living in their country of birth. In absolute terms, the migrant population has increased by almost 120 million since 1990. However, the number of migrants has been strikingly stable in proportion to the world population, hovering at about 3 percent over the past 60 years (De Haas and others 2019). Thus, only a very small fraction of people in the world migrate. One reason is the highly restrictive immigration policies, built into the modern welfare state, due to nationalism, distributional effects, and fiscal aspects of inflows of foreign population.

Generous social benefits have encouraged a massive surge of “welfare migration.” Twenty-six million migrants now call Europe their home. This migration has been concentrated in the unskilled sectors. As well as attracting migrants, the generosity of the welfare state can determine the likelihood of those to leave. Khoudouz-Casteras (2004) studies emigration from nineteenth-century Europe and finds that social insurance adopted by Bismarck in the 1880s reduced the incentives of risk-averse Germans to emigrate. He estimates that in the absence of social insurance, the German emigration rate from 1886 to 1913 would have more than doubled. A skilled (rich) and young native-born who expects to bear more than an average share of the cost of providing the benefits of the welfare state is likely to oppose admitting unskilled migrants on such grounds. On the other hand, the same native-born may favor unskilled migrants to

the extent that a larger supply of unskilled workers boosts skilled workers' wages. The native-born older voters may favor migration, even low skilled, on the ground that it could help finance their old-age benefits.⁴

The book blends together stylized elements of trade globalization, financial globalization, international tax competition, immigration, and welfare state, all in a political-economy model, where the welfare state parameters (taxes and social benefits) are determined through majority voting. We find that when the country is capital-abundant relative to the rest of the world, or when it is high saver, a welfare state governed by the skilled-rich magnifies the intensity of globalization.

When the country is labor abundant relative to the rest of the world, a low-saver which accumulates relatively little capital, how the welfare state governed by either the poor or the rich, affects the intensity of globalization?

Similarly, when the country is capital abundant relative to the rest of the world, a high-saver which accumulates relatively lots of capital, how the welfare state governed by either the poor or the rich, affects the intensity of globalization?

The book compares different policy regimes, directed at migration and redistribution issues. Migration quotas, provision of social benefits, labor income taxation, and capital income taxation, are all endogenously determined in a policy-optimizing framework. The analysis makes a three-way comparison: free-migration regime vs. restricted-migration regime, welfare state regime vs. no-migration-quota, no-redistribution regime, and low-income-majority regime vs. high-income-majority regime.

Episodes of functioning trifecta (i.e., globalization, migration, and welfare state) are rare. Israel is a unique episode of such functioning trifecta. Indeed, Israel provides a counter example to both the anti-globalization view, and to its capacity to take in and assimilate migrants into the local economy. The well-developed Israeli welfare state institutions are, in part, the reason for the successful immigrant-assimilation story. A middle-income economy in the midst of a hyperinflation in the early 1980s, Israel grew into one of the most thriving economies in the world: and this despite the on-going security challenges, which tend to drain on resources

⁴Hanson (2009), employing opinion surveys, find for the US that native-born residents of states with a high share of unskilled among the migrant population prefer to restrict in migration. Native-born residents of states with a high share of skilled migrants among the migrant population, meanwhile, are less likely to favor restricting migration.

from investment projects. Israel's successful globalization-based economic path is consistent with the enthusiasm policymakers around the world pushed forward the globalization wave.

In federal systems, typically, the trifecta is imperfect. EU and the US provide insightful lessons for complicated interactions among globalization, migration, and the welfare state. Due to their federal structure the "trifecta" works imperfectly. A key difference between the EU and the US concerning the welfare state generosity happens in the area of health care. The US spends more per capita on healthcare than any other country in the world, amounting to about one-sixth of the country's economy. However, despite the high price tag, the US is still the only wealthy, developed nation without universal health coverage. In contrast, the European countries pioneered in providing universal health care system. Recall that EU member states and US states are arranged in federal economic systems. US like fiscal-migration federal system and EU like union of fiscal and migration sovereign states. Coordinating the fiscal and migration policies allows the member states to offer less generous social benefits than when they compete with each other. The rationale for this result is rooted in a fiscal externality associated with migration.⁵

⁵There are significant differences in skill-based migration policies between the EU and the US. US migration policy has a strong high-skilled element. Launched as part of the Immigration Act of 1990, the H-1B visa program is intended to satisfy demand for workers with a bachelor's degree, or higher, in occupations that require specialized technical knowledge. The high-skilled visa program is effectively a path to US citizenship. Not to the same extent in the EU, except some outliers.

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De-globalization, Crisis Driven

While the pandemic-induced slump in economic activity is deep, consumer spending, investment spending, and export demand tumble. Central banks, unarmed by the conventional monetary policy tool—the rate of interest—tied down by the zero interest rate—may still help in regulating the ballooning corporate debt. Fiscal policy, against the backdrop of the pandemic, becomes the most effective policy tool that is available in the short run.

Longer-term, there is a risk that younger students from poorer backgrounds will struggle to catch up after an extensive period out of school due to lockdowns and other disruptions. Education disruptions by the pandemic, distorts the development trajectory of children, degrades social mobility, diminishes productivity, and breeds inequality.

1 GLOBAL CRISES: HISTORY

Carmen Reinhart and Kenneth Rogoff (2014), while surveying centuries-old crises, have discovered startling qualitative and quantitative parallels across a number of standard financial crisis indicators in 18 postwar banking crises. They found that banking crises were protracted (output declining on average for two years); asset prices fell steeply, with housing

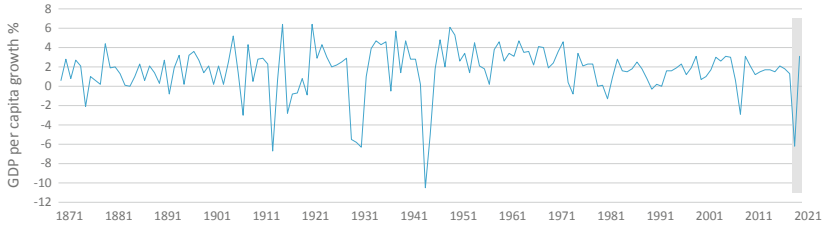


Fig. 1 Global growth 1871–2020 (*Source* World Bank [2020], Global Economic Prospects)

plunging 35% on average, and equity prices declining by 55% over 3.5 years. Unemployment rising by 7 percentage points over four years, while output falling by 9%.

Figure 1 indicates that since 1870, the global economy has experienced 14 global recessions. As for the most recent, the Global Pandemic Crisis, current projections suggest that the COVID-19 global recession will be the fourth deepest, and the most severe since the end of World War II.

2 THE GREAT DEPRESSION, THE GLOBAL FINANCIAL CRISIS AND THE GLOBAL PANDEMIC CRISIS

Figure 2 displays the index of world industrial production during the

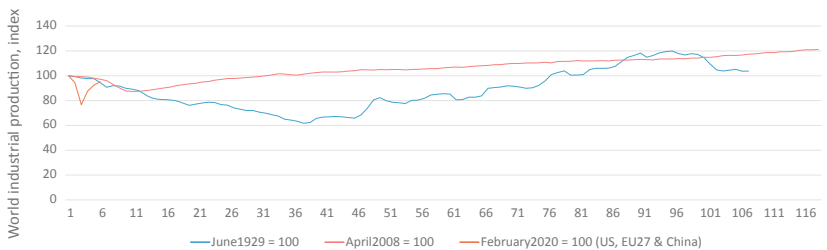


Fig. 2 World industrial production, Great depression vs. global financial crisis (*Source* Updated dataset of Eichengreen and O’Rourke [2010]. Recent data for US and EU are taken from the OECD [2020], the Chinese data taken from the National Bureau of Statistics of China [Press release, August 2020]. Indices are weighted by 2019 real GDP [in PPP terms] from the OECD)

months following the onset of three crises: June 1929 for the Great Depression (GD), April 2008 for the Global Financial Crisis (GFC), and March 2020 for the Global Pandemic Crisis (GPC).

The Global Financial Crisis has some similarities with the Great Depression. Eichengreen and O'Rourke (2010) observe that the downturns following the two financial crises were initially very similar. The first year of the 2008–2009 slump in industrial production was fully comparable to the first year of the great global slump from 1929 to 1933. It appears that in both cases the trigger is a credit crunch following a sudden burst of asset-price and credit bubbles. However, differences in financial institutions and policy reactions (monetary, fiscal and regulatory) may explain the divergence of tracks after the initial stages. Recovery of world industrial production starts much earlier in the Great Recession than in the Great Depression. Periods of depressed output are significantly shorter in the former than the latter, thanks to different policy reactions and improved financial and budget institutions. The difference between the two global crises occurred after about ten months. During the Great Recession, there was a relatively quick recovery after ten months. Such a recovery did not occur during the Great Depression. The downturn would continue for another 25 months before the recovery set in. As indicated, the fundamental reason for the sharp contrast between these two crises, in terms of recovery periods, was the different reactions of monetary and fiscal authorities.

The Global Pandemic crisis is not caused by failures of the financial system as was the case regarding GD and GFC. It is caused by the pandemic shock that required lockdown of productive sectors of the economy. Contributing to the macroeconomic theory of the health driven crises, Guerrieri et al. (2020) demonstrate in a general equilibrium setting, that supply shock, such as Covid-19, can trigger changes in aggregate demand larger than the shocks themselves. This is possible when supply shocks are concentrated in certain sectors, as they are during a shutdown in response to a pandemic. The fact that some goods are no longer available makes it less attractive to spend overall. An interpretation is that the shutdown increases the shadow price of the goods in the affected sectors, making total current consumption more expensive and thus discouraging it. On the other hand, the unavailability of goods in some sectors can shift spending towards the other sectors, through a substitution channel. Whether or not full employment is maintained in the sectors not directly affected by the shutdown depends on the relative

strength of these two effects. A supply shock in sector 1 can spill over into a demand shortage in sector 2 that is amplified by incomplete markets. Guerrieri et al. (2020) then turn to borrowing constrained consumers and show that the condition for a contraction in employment in unaffected sectors becomes less stringent. Intuitively, if workers in the affected sectors lose their jobs and income, their consumption drops significantly if they are credit constrained and have high MPCs. To make up for this, workers in the unaffected sectors would have to increase their consumption of the remaining goods sufficiently. This requires a higher degree of substitution across sectors. If goods are not too close substitutes, aggregate demand contracts more than supply and employment in the unaffected sectors falls.

In comparing the 2008 Global Financial Crisis (GFC) to the 2020 Global Pandemic Crisis (GPC) there are few key differences.

Origin of crisis. The shock that started the GFC was an internal to the economy. The crisis originated from the malfunctioning of the economy's financial system. In contrast, the shock, which started and prolonged PC, was external to the economy. Epidemiology forces drive the crisis.

Magnitude of the initial shock. Quantitatively, the first quarters decline since the inception of the crisis, in employment and output, are greater in the PC case, compared to the GFC case.

Length of recovery. The recovery period from PC, once immunity from coronavirus is discovered and covered large segments of the population, is expected to be quick. In contrast, the recovery period in the GFC case was protracted.

3 US UNEMPLOYMENT AND OUTPUT

The first two quarters after the pandemic shock to output were the most severe in recent history. Figure 3 shows the magnitude of the initial shock compared to post WWII events of a downturn of US output.

Pandemic lockdowns brought the unemployment rate to an historical high (see Fig. 4). Exiting from the lockdown, U.S. jobs grew by 4.8 million in June 2020. It was the second month of strong job gain after the lockdown huge losses, when businesses laid off or furloughed tens of millions of workers as the pandemic put a large swath of economic activity on ice.

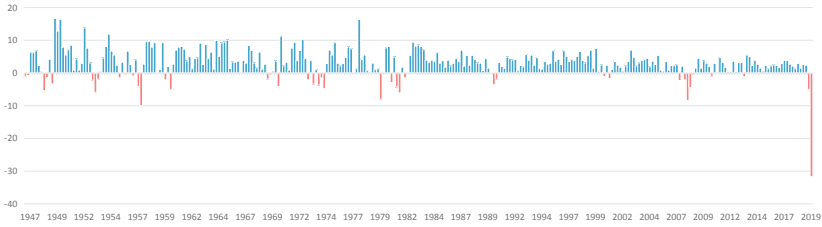


Fig. 3 US gross domestic product: percentage change from previous quarter, 1950–2020 (2nd quarter) (*Source* US Bureau of Economic Analysis [2020])

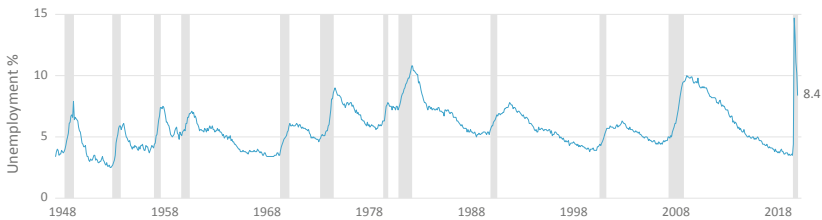


Fig. 4 US unemployment rate since 1948 (*Source* Bureau of Labor Statistics and the Federal Reserve Economic Data. Unemployment rates are seasonally adjusted)

4 FISCAL POLICY: RELIEF AND STIMULUS

Disparities in the 2020 pandemic US unemployment across different demographic groups are significant. The largest employment declines during the pandemic to date are among Hispanics, younger workers and workers who have a high school degree or some college education but have not completed a college degree.

Social distancing is more difficult for workers in the service sector and unemployment rates are higher for some service sector occupations like food service and travel. Workers in jobs where face-to-face interactions are difficult to avoid are significantly more likely to have been unemployed.

The US employment rebound came in part thanks to more than \$500 billion in federal aid to small businesses offered on the condition that workers be retained, under the one-off Paycheck Protection Program. The “keep-heads-above-water” policy response has been massive and quick among advanced economies. The European style is trying to

preserve firms and workers in their current jobs and the U.S. version is to try to address it as a natural catastrophe and try to subsidize people but allow higher unemployment. In the US, Cares Act legislation was aimed at providing relief for individuals and businesses that have been negatively impacted by the coronavirus outbreak. The CARES program included:

Direct payments: Americans who pay taxes will receive a one-time direct deposit of up to \$1200, and married couples will receive \$2400, plus an additional \$500 per child. The payments will be available for incomes up to \$75,000 for individuals and \$150,000 for married couples.

Unemployment: the program provides \$250 billion for an extended unemployment insurance program, expands eligibility, and offers workers an additional \$600 per week for four months, on top of what state programs pay. It also extends UI benefits through Dec. 31 for eligible workers. The program applies to the self-employed, independent contractors and gig economy workers.

Payroll taxes: The measure allows employers to delay the payment of their portion of 2020 payroll taxes until 2021 and 2022.

Use of retirement funds: The bill waives the 10% early withdrawal penalty for distributions up to \$100,000 for coronavirus-related purposes, retroactive to Jan. 1, 2020. Withdrawals are still taxed, but taxes are spread over three years, or the taxpayer has the three-year period to roll it back over.

The Federal Reserve, that had cut interest rates to near zero, had rolled out a 2008 type menu of emergency loans programs, while teaming up with the Treasury Department with programs to support lending to small and medium-size businesses, and buy corporate debt. That is, the Federal Reserve took a semi-fiscal expansionary policy. The Paycheck Protection Program (PPP) act offered small businesses loans that can be converted into grants if they are used to maintain payroll. US Bureau of Labor Statistics (May 2020 report) shows a partial bounce back of contact-intensive sectors like restaurants and dentists' offices that were largely shut down by social distancing. Welfare states reacted with many job maintenance and firm relief measures have been implemented during the Great Lock-down. In both the EU and the US tax deadlines have been pushed back. Many US states waived the one-week 'waiting period' before receiving unemployment benefits and the job search requirement. They expanded eligibility to include those who need to stay at home to take care of either a child (due to daycare and school closures) or other dependent, who may be sick/quarantined, and those who are themselves sick or quarantined due to suspicion of being sick.

The UK government is further putting in place government-backed, subsidized loans to help small businesses weather the storm. The French government is extending its ‘chômage partiel’ (temporary unemployment) program, effectively covering 85% of wages. Germany’s stimulus package centerpiece includes a three percentage-point reduction in value added tax, valid from June 2020 until the end of 2020. In addition, the coalition partners signed off on a €50bn “future package” of investment, with a focus on the transition to a greener economy, and research in areas such as artificial intelligence and quantum computing. Huge sums will be spent on expanding Germany’s charging infrastructure for electric cars. Since the VAT is equivalent to a tax on wages, plus a tax on wealth, the cut in VAT boosts consumption spending and provides incentive to work. It also has an intertemporal stimulating effect. The government changes VAT rates to create a future path of increasing sales taxes and hence stimulate inflation expectations.

5 REAL-TIME EVIDENCE

Chetty et al. (2020) use daily credit card data to provide real-time evidence on impacts of the Covid-19 Pandemic.¹ They find that in the first few months of the pandemic, spending fell much more for the rich than the poor (top 25% vs. bottom 25%), and the bulk of the reduction resulted from a drop in spending on in-person services. This indicates there was not necessarily a reduction in purchasing power. The reduction was related to fears of the virus. Business revenue dropped more severely in high-income areas. The authors’ interpretation is that this is a supply shock, not a lack of purchasing power.

CARES Act stimulus increased spending, but did not fill the hole created by the pandemic shock. Stimulus checks did increase spending among low-income Americans, but the vast majority of the increase in spending was on durable goods, not in-person services. For stimulus to have an impact on employment in the short-run, people would have to switch jobs or move.

¹Economists often study the effects of shocks with household survey data, but these data—while important—have limitations. First, they have time lags and low frequencies. Second, they cannot be disaggregated.

The PPP act had limited impact on employment. The authors suggest that businesses who took the loans did not expect to lay off workers to begin with.

Effects of this shock on employment and inequality may be long lasting and require policy interventions. 70% of low-income workers who had jobs in wealthy parts of Manhattan lost their jobs. Chetty cites evidence, from past studies of the Great Recession that people do not often move in search of new jobs; suggesting policy intervention may be required. Further, there are potentially big implications for inequality. One example: Low-income students are doing far fewer math exercises on commonly used app than their higher-income peers are.

6 DOES FINANCIAL GLOBALIZATION ENDURE CRISES?

Full international financial integration requires that in the long run (when prices adjust to various shocks and markets clear), the following arbitrage equation holds:

$$1 + r_t^{US} = (1 + r_t^i) \frac{q_{i/US,t+1}}{q_{i/US,t}},$$

where i stands for Israel, Canada, Germany and the United Kingdom; and q stands for the real exchange rate *Vis a Vis* the US dollar²:

$$q_{i/US,t}^t = E_{i/US,t} \frac{P_{US,t}}{P_{i,t}},$$

In addition, E stands for the nominal exchange rate, *Vis a Vis* the US dollar; and P stands for the price level.

This measure of financial integration portrays how close is the country's real interest rate, adjusted for the real exchange rate evolution

²Recall that by the Fisher equation:

$$1 + r_t^{US} = (1 + i_{US}^t) \frac{P_{US,t}}{P_{US,t+1}}, \text{ That is, } (1 + r_t^i) \frac{q_{i/US,t+1}}{q_{i/US,t}} = (1 + i_t^i) \frac{P_{i,t}}{P_{i,t+1}} \frac{q_{i/US,t+1}}{q_{i/US,t}}$$

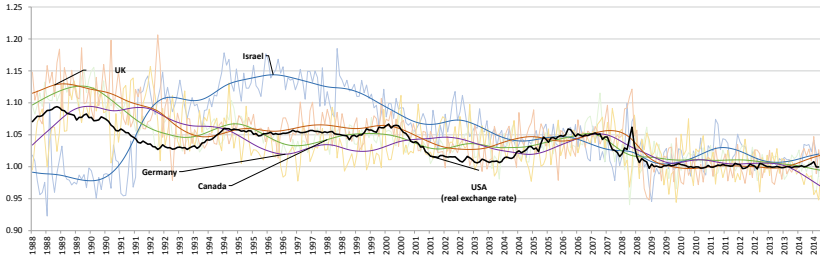


Fig. 5 Gross real interest rate adjusted for real exchange rate changes (US benchmark) (*Source* Stats Bureau, FRED, World Bank, Real-exchange-rate adjusted, yields on three-month government bonds for Israel, Canada, Germany and the United Kingdom, and the yields on three-month US government bonds. *Note* Series are HP-filtered. Monthly data are shown in the background)

from the present into the next period, to the world real interest rate. Other countries, using their own currencies, have their own domestic price adjustments processes. Under perfect international arbitrage the real rates of interest, adjusted for real exchange rate changes are equalized.

Fig. 5 plots the graphs of the real-interest-rate, adjusted for real exchange rate changes, the yields on three-month government bonds for Israel, Canada, Germany and the United Kingdom, and the yields on three-month US government bonds. International financial integration generates more synchronized country-specific yields. Time series are filtered to wash out short-run idiosyncratic fluctuations. This figure demonstrates strikingly that in the 1990s Israel integrated sufficiently into the world capital market, while convergence occurred at the beginning of the 2000s.

The cross-country dispersion measure, shown in Fig. 6, describes a downward trend, except for a short-term blip during the Great Financial Crisis.

In sum, Fig. 6 brings out a strong evidence for financial integration among advanced economies.³

³In the Appendix we depict the cross country trend of standard deviation of Israel's real interest rates adjusted for exchange rate changes and the US real interest rate.

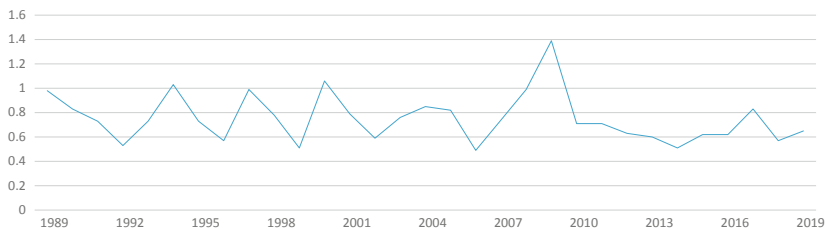


Fig. 6 Cross-country standard deviation of real interest rates adjusted for exchange rate changes (*Source* Stats Bureau, FRED, World Bank, Real-exchange-rate adjusted, yields on three-month government bonds for Israel, Canada, Germany and the United Kingdom, and the yields on three-month US government bonds)

7 TRADE-GLOBALIZATION IN RETREAT

The ICT revolution has made a great unbundling of production chains possible, and large wage differentials, globally, have made doing so—profitable. This generated vast new quantity of ‘supply chain trade’. Greater international economic interconnectedness over recent decades has been changing inflation dynamics.⁴ The expansion of global value chains (GVCs), i.e., cross-border trade in intermediate goods and services, is an important channel through which global economic slack influences domestic inflation.⁵ As GVCs expand, direct and indirect competition among economies increases, making domestic inflation more sensitive to the global output gap. This can affect the trade-offs that central banks face when managing inflation. The slope of the Phillips Curve may have changed.⁶ There is evidence that global inflationary cycles that correspond with an intensifying globalization propagates common shocks via commodity, trade and financial channels. Correlations of CPI are as elevated today as during the first oil shock and on the surface we appear to be in the midst of a highly synchronized global rates cycle.

⁴See Carney (2015).

⁵See Auer et al. (2017).

⁶See Razin (2018).

Global value chains will likely undergo a drastic transformation in the decade ahead. The change will be driven by a push for greater supply chain resilience due to the pandemic.

One aspect of a lack of resilience to pandemic, in the last decades of globalization, is that GVCs were highly vulnerable. They have not been sufficiently diversified. Consequently, they are sensitive to interruptions caused by either a pandemic like this one or trade conflicts. Even prior to the Corona virus pandemic, trade globalization was challenged by a rising wave of populism spurred on by economic discontent in Europe, the United States, Latin America and elsewhere and a trade war between the US and China. The recent backlash against trade globalization is not a new phenomenon, either. International trade increased rapidly after 1990, fueled by the growth of a complex network of GVCs. These chains represent the process of ever-finer specialization and geographic fragmentation of production. Kilic and Marin (2020) distinguish between local value chain participation, regional value chain (RVC) participation and global participation (GVC). Generally speaking, the higher the participation in intra-regional RVCs, the higher the degree of regional economic integration. Likewise, the higher the degree of participation in inter-regional GVCs, the higher the degree of economic integration into the global economy. In the wake of the 2008 Global Financial Crisis, uncertainty in the world economy led many firms to reassess their business models. Rather than relying on global supply chains, an increasing number of firms invested in robots, which prompted a renaissance of manufacturing in industrialized countries. As indicated previously, the global value chains could be reshuffled, or be reduced. Whether they will be localized or regionalized, or whether the crisis will lead to the continuation of globalization. A short period of economic recession seems unavoidable, but the question is whether COVID-19 crisis will structurally transform globalization on the long-term.

Global trade, measured by the ratio of world exports to world GDP, is a proxy for economic integration. Figure 7 reveals five periods of modern globalization (see Irwin 2013).

The pandemic is expected to add further momentum to the de-globalization trend. The forecasted diminished world trade in goods is shown in Fig. 8.

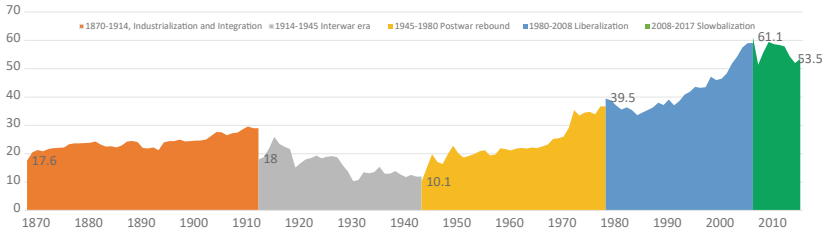


Fig. 7 Ratio of world exports to world GDP: 1870–2007 (*Source* Our World in Data, “Globalization over 5 centuries, World”)

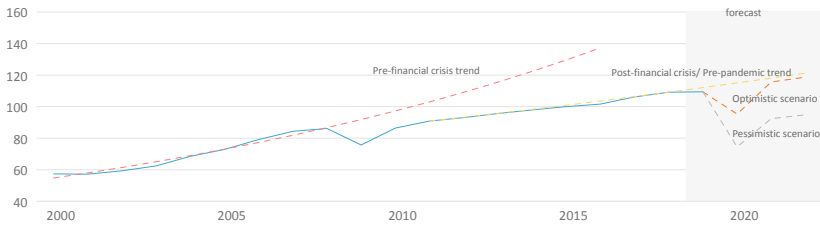


Fig. 8 Volume of world merchandise trade (*Source* WTO, Merchandise export volume indices)

World Investment Report has monitored FDI and the activities of multinational enterprises for 30 years, during which time international production saw two decades of rapid growth followed by a decade of stagnation. Flows of cross-border investment in physical productive assets stopped growing in the 2010s, the growth of trade slowed down and global value chain (GVC) trade declined (Fig. 9).⁷

⁷See UNCTAD (2020).

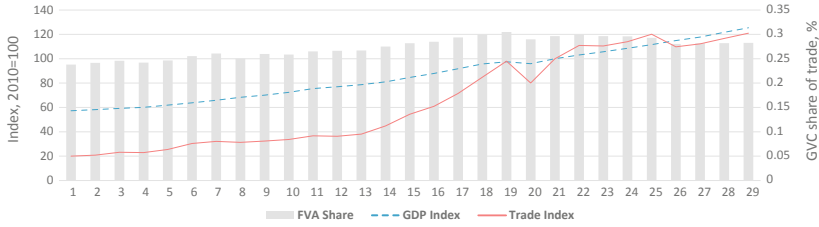


Fig. 9 Global value chain (*Source* The Eora Global Supply Chain Database, UNCTAD [2020] and the World Bank [2020]). Trade is global exports of goods and services. GVC share of trade is proxied by the share of foreign value added in exports, based on the UNCTAD-Eora GVC database [Casella et al. 2019])

8 CONCLUSION

Over the past few decades, markets have opened, financial system have been globalized, and supply chains have gone global. However intra-country inequality has been steadily rising. More recently, triggered by global crises, an inequality-driven backlash against the increasingly free flow of information, ideas, money, jobs and people has created strong political pressures. The result has been tightened immigration rules, new barriers to trade and investment, a shortening of supply chains, and a technological decoupling. The Pandemic Crisis has already forced travel restrictions, and protectionist policies. The coronavirus reinforced the de-globalization turning point of the world economy. The Global Pandemic Crisis is not caused by market failures of the financial system, as in cases like the Great Depression or the Great Financial Crisis. It is caused by severe global health shock, requiring lockdown of some productive sectors of the economy. Although there may be an initial “catch up” surge of consumer spending with the appearance of the vaccine, in the longer run consumers are likely to save more than in the absence of the new era of pandemics. Therefore, the world-wide saving-glut trend is likely to be reinforced by the current pandemic. This chapter address the strains posed by the Corona pandemic: there is a temporary setback to globalization and migration. The income-inequality gaps become more pronounced. and the ability of governments to provide the various services of the welfare state, in a style to which many of their citizens have become accustomed, is weakened. In the post-Corona era, firms are likely to have strong incentives to revise course of action, and

substitute GVCs with adopting robots. Such a shift may lower demand for unskilled workers, while increasing the demand for their counterparts, the high skilled. Wage gaps may consequently rise. The increased frequency of pandemics may also change migration patterns. Border closures, suspended asylum programs, interruptions in global transportation, and stay-at-home lockdowns have drastically curbed migration from poorer nations to rich ones. The pandemic, as a result, is likely to change the migration skill-composition patterns, as low skill workers typically present more social-distancing problems than high skilled do. The corona virus pandemic has therefore altered the interactions among globalization, migration, and welfare state policies in major ways.

APPENDIX: ISRAEL'S FINANCIAL INTEGRATION WITH THE WORLD FINANCIAL MARKETS

The globalization process that Israel took is covered in Chapters 2 and 3, and in Razin (2018). Fig. 10 shows that, except the GFC period, The Israel-US dispersion is trending down. The downward trend indicates the steady integration of the Israel's financial market into the world financial market; primarily that of the US.

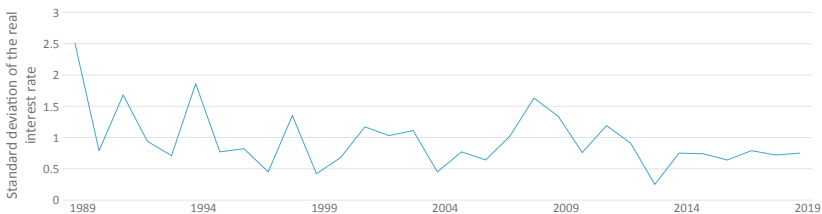


Fig. 10 Cross country standard deviation of the real interest rate (adjusted by the real exchange rate changes): Israel and the US (*Source* Stats Bureau, FRED, World Bank, Real-exchange-rate adjusted, yields on three-month government bonds for Israel, and the yields on three-month US government bonds)



Migration and the Welfare State: Macroeconomics

The developed world in the last few decades has experienced an unprecedented demographic change. In virtually all OECD countries, people are getting older—a lot older. The reasons are dramatic baby bust, following the equally dramatic baby boom, and the remarkable increase in life expectancy. Fiscal prospects depend on two factors, in order to mitigate adverse macroeconomic impact of ageing. The first is the potential for capital deepening. The second is increased immigration.

The potential for a big surge in cross-border labor mobility is beyond that has ever been before.¹ First, gaps between what the same worker can make in one country versus another are higher than they have ever been in history. That is, gaps are much higher than the wage differentials that drove the “mass migration” at the nineteenth century and early twentieth century. Second, ageing trends in the migration-destination countries decrease the supply of young workers in them. Third, the globalization of finance, information, and trade, lessen costs of international labor mobility. However, the main hurdle to labor mobility are restrictions on immigration by the host countries. The potential for massive migration could only come about if administrative migration barriers were to

Draws on research in Razin and Schwemmer (2020).

¹ See Prichett (2006) insightful essay.

be lifted. That is, as with the “mass migration” in the nineteenth century, migration becomes free.²

The international movement of labor remains much more restricted than movement of goods or capital, and the worldwide economic gains to liberalizing migration are large. Gains could be realized through better international cooperation on migration along the lines of the WTO for trade. The key impediment is the lack of a basis for reciprocity in negotiations over migration, this is because migration is largely driven by absolute advantage rather than by comparative advantage as in the case of trade. Consequently there is no basis for WTO-style negotiations over migration and therefore no grounds for reforming the international architecture in the hope of fostering liberalization.³

One reason for migration restrictions emerges from the negative effect of immigration on native-born employment and wages.⁴ Another reason for the rise of policy-based restrictions on cross-border migration is the advent of a more generous welfare state.⁵ Milton Friedman famously quipped: “free immigration and a welfare state are incompatible”.⁶ However, as population ageing progresses, and the share of native born which depend on the provision of social benefits rises, the welfare

²Between 1850 and 1915, during the Age of Mass Migration, the US attracted close to 30 million European immigrants, and the foreign-born share of the US population peaked at 14% (Abramitzky and Boustan 2017).

³See Hatton (2007).

⁴See the findings in Borjas (2003) and Dustmann et al. (2017) among others, it is in contrast with results in Card (2001, 2005), Foged and Peri (2016), and Ottaviano and Peri (2012), who document that immigrants have a negligible, or even positive, impact on native-born earnings.

⁵During the Age of Mass Migration, more than 30 million people moved from Europe to the US (Abramitzky and Boustan 2017), and the share of immigrants in the US population was even higher than it is today. During the 1910s and the 1920s the US pattern of voters radically changed (e.g., women received voting rights) and a welfare state institutions started to emerge. Anti-immigration sentiments were widespread, and the introduction of immigration restrictions is advocated on both economic and cultural grounds.

⁶Israel provides a counter example. The constitutional Law of Return imposes no immigration barriers to the Jewish diaspora (see Razin 2018). Israel, which has a modern welfare-state system, not only enables free immigration but also grants Jewish immigrants immediate citizenship, regardless of origin or skill. The EU is another modern counter example to his observation. Every EU country is obligated to enable free entrance to any individual originated in other EU country, while each country retains its own welfare-state system.

state benefits from unrestricted migration. It needs more immigrants for the sustainability of the social insurance system.⁷

Lindbeck (1985) observes that during the first part of the twentieth century, life cycle and insurance-type considerations seem to have dominated redistribution policy. By contrast, during the decades following WWII, ‘fragmented horizontal redistributions’ between various minority groups have probably been the most important mechanisms. The self-interest of different groups of the electorate seems to have provided the most powerful motive behind redistribution in favor of the poor.

A representative welfare state, with its relatively abundant supply of capital, and high productivity (implying relatively high wages for all skill levels) is able to attract both unskilled-poor and skilled-rich migrants. However, its relative generosity attract relatively more unskilled-poor migrants. They expect to gain more from the benefits of the welfare state than what they pay in taxes. A note-worthy trend in migration policy in the OECD countries is the move toward restricting migration, by placing more emphasis on skills,⁸ that is, immigrants with high skills and education are preferred over immigrants with low skills and education. Skill-selection immigration policy has been instituted in Australia, New Zealand and Canada. The US also adopted such rules in 1990, as have a growing number of EU countries, including France, Ireland and the UK.⁹ Major immigrant-receiving countries are increasingly interested in ways to select immigrants across a range of skill levels, retain those with the greatest potential to succeed, and engage employers constructively in the immigration process.

⁷See Zaiceva and Zimmermann (2016) for a recent literature survey of population ageing and international migration.

⁸This trend is documented in Kapur and McHale (2005).

⁹A point-based system is a method to rank applications for residence and work permits. It has been adopted by Australia, Canada, and New Zealand and, in Europe, by Switzerland. In such a system, each application is allocated a score based on explicit criteria which typically reward educational attainment, experience, and language abilities. “Bonus points” can also be given for employment in occupations and regions where there is a shortage of workers. Recently, the UK proposed a new system, billed as a “points-based system”, which treats migrants equally, regardless of where they come from. After Brexit, Europeans will no longer benefit from freedom of movement. Policy preferred occupations are “shortage occupation list” (SOL), central to the government’s planned new immigration rules. Most immigrants will need to speak English and have a job offer with a prospective salary of more than £25,600 (\$33,245).

Welfare-state voters are motivated in their voting preferences not only on how migration affects their wage income. That is, since the welfare state redistributes income from the rich to the poor, unskilled migrants, over lifetime, are net beneficiaries of the welfare state. In contrast, skilled (rich) migrants are in general net contributors. Consequently, under free migration, the migrant skill composition is tilted towards the unskilled; whereas under controlled migration regime, the skill composition is skewed towards the skilled.

However, voters are driven also by how migration bears on the social insurance system when they retire, become unemployed, etc. Migration effects on the social insurance system are common to voter preferences, regardless of skills. From the public-finance point of view, native-born voters opt for high-skilled migrants to come on shore; whereas, for the unskilled to stay away, to mitigate the fiscal burden on them. Therefore, notwithstanding the common interests in social insurance, every welfare state unavoidably adopts migration regulations and restrictions.¹⁰

We compare different social insurance and migration policy regimes by using a stylized international-macroeconomic framework. Key policy variables are the provision of social benefits, determined jointly with skill-based migration policy. Tax policies, capital mobility, good mobility, and policy, are all endogenously being determined in a general-equilibrium setup. Features analyzed are self-interest income group, ageing, and globalization. To this end, we develop a model in which (life-cycle) social insurance and skill-based migration policies are driven by the ageing of the population. Our analysis involves a three-way comparison: free-migration regime contrasted with a controlled-migration regime, welfare-state regime contrasted with free-market regime, and skilled-rich controlled regime vs. unskilled-poor controlled regime.

The chapter is organized as follows. Section 1 briefs on the relevant literature. Section 2 and 3 describe the main blocks of the model. Section 4 presents model predictions, based on simulation results, and Sect. 5 concludes.

¹⁰See Razin et al. (2011).

1 LITERATURE

Gary Freeman (1986) observes, “The logic of the welfare state implies the existence of boundaries that distinguish those who are members of the community from those who are not. Migration continuously intrude on, and challenge, the endogenous nature of the welfare state.” At the same time redistribution policies by the welfare state, through inherent political-economic forces, set strict limits to the free mobility of people. All industrial countries, which are the major host countries for migration, uphold extensive welfare state systems. They provide some combination of income support and direct provision of goods (e.g., housing, health care, education).

As for migration, the standard theory concludes that the major cause is wage-level differences among countries. Labor migration would stop if wage differences vanish.¹¹ However, the generosity of the welfare state should also be included as a trigger. When it comes to the interaction of migration policy and the welfare-state-generosity policy, one argument often heard in public debate is the view that immigrants are drawn towards a more generous welfare systems of the receiving countries. This is the basis for welfare-state-as-magnet hypothesis. However a fundamental question that remains unanswered is how migration policy is determined in the first place. Is it originated from the source country preferences of would be migrants; is it restricted by policy maker preferences in the destination country; or whether migration is determined by both forces. The former driving force, that migration is determined at the source, and workers entering the “open doors to heaven” has been the tradition in the labor economics literature (Borjas 1999). In reality, who is allowed into a country, depends on active immigration policy of receiving countries; not the source countries. Receiving countries, more often than not, enact quotas, point systems, and the like, in order to select those

¹¹This theory suggests that the labor migration moves from capital-poor/labor force-rich countries to capital-rich/labor force-poor countries, while by contrast capital moves in the opposite direction, expecting a higher return on investment made in capital-poor countries.

immigrants whom they deem most desirable (see Razin et al. 2002).¹² Models in which redistribution policy is determined by the majority rule predicts that the median voter serves as a major check on inequality via redistributive policies.¹³

High and lasting restrictions on immigration stand in marked contrast to accelerating liberalization of the goods markets, starting soon after World War II through the GATT, and liberalization of capital markets starting after the breakdown of the Bretton woods system in 1973. At present, markets for goods and services as well as capital are global, whereas labor markets are still national, without much policy to liberalize immigration; see Freeman (2006). Economic historian Khoudour-Castéras (2008) studies migration from the nineteenth century Europe. He finds that the social insurance legislation, adopted by Bismarck in the 1880s, reduced the incentives of risk averse Germans to emigrate. He estimates that in the absence of social insurance, German emigration rate from 1886 to 1913 would have been more than doubled their actual level. Southwick (1981) shows with US data that high welfare-state benefit gap, between the origin and destination regions in the US, increases the share the welfare-state benefit recipients among the migrants. Gramlich and Laren (1984) analyze a sample from the 1980 US Census data and find that the high-benefit regions will have more welfare-recipient migrants than the low-benefit regions. Using the same data, Blank (1988) employs a multinomial logit model to show that welfare benefits have a significant positive effect over the location choice of female-headed households. Meyer (2003) employs a conditional logit model, as well as a comparison-group method, to analyze the 1980 and 1990 US Census data and finds significant welfare-induced migration, particularly for high school dropouts. Borjas (1999), who uses the same data set, finds that low-skilled migrants are much more heavily clustered in high-benefit states, in comparison to other migrants or natives. Gelbach (2004) finds strong

¹²Facchini et al. (2004) extend their analysis to investigate the role of lobbying in shaping migration policy.

¹³Traditional theory of the determinants of the size of the government in a direct democracy highlights the relationship between the scope of redistribution, i.e. the extent of the welfare state, and pre-tax income inequality. Two interpretations explain this dependence: Lovell (1975) emphasize the size of the government as a provider of public goods, while others such as in the traditional median voter models of redistribution in Roberts (1977), Meltzer and Richard (1981). They emphasize the role of extensions of the voting franchise and the pre-tax inequality on redistribution of income.

evidence of welfare migration in 1980, but less in 1990. Levine and Zimmerman (1999) estimate a probit model using a data set for the period 1979–1992 and find, on the contrary, that welfare benefits have little effect on the probability of female-headed households (the recipients of the benefits) to relocate. Dustmann and Frattini (2014) bring evidence of no welfare migration.

In general, a change in the share of high-skilled migrants in the total number of migrants affects the utility level of the decisive voter through three channels. First, an increase in the skill-share raises the economy's labor productivity and thereby its capacity to raise tax revenues. This, in turn, raises its ability to provide social benefits, per capita. Second, an increase in the migrant skill-share, which evidently raises the supply of high-skilled labor relative to the supply of unskilled labor, depresses the skill premium in the labor market. Third, raising the tax rate is distortionary, moving the economy below its production possibility frontier. If the decisive voter is low skilled, both of the above effects raise his utility. Thus, a low-skilled voter would like to set the skill composition of migrants at its maximum. If, however, the decisive voter is high-skilled, whereas the first effect raises his utility, the second effect lowers it. This means that the share of high-skilled migrants preferred by the decisive skilled voter is typically lower than that preferred by the decisive low-skilled voter. Under a policy-controlled migration regime, if the decisive voter is a low-skilled worker, an increase in the tax rate (which thereby raises the provision of social benefits) would benefit a low-skill migration policy. Because, it is always set at the maximum possible limit, constrained by the magnitude of the tax distortionary effect. However, if the decisive voter is a high-skilled worker, an increase in the tax rate (thereby raising the provision of social benefits) will change the policy concerning the skill composition of migrants in the direction towards a larger share of skilled migrants. The reason for this is that when the tax rate is higher, the redistribution burden upon a high-skilled decisive voter increases. That is, allowing an additional skilled migrant can ease this rise in the fiscal burden. In both cases, if the decisive voter is high-skilled worker or the low-skilled worker the skill-mix of migrants is higher than what is expected to be if migration-controlled policy is absent. This effect is called a fiscal-burden effect of the welfare state generosity on the skill-composition of migrants. An increase in the generosity of the welfare

state in the destination country, under free migration, would mean greater fiscal burden falling on the high-skilled migrants and more redistribution that benefits low-unskilled migrants, thereby diminishing the skill composition of migration. This effect is called a magnet effect of the welfare state generosity on the skill-composition of migrants. Razin and Wahba (2015) put these effects into an empirical validation, using the inter- and intra-migration flows in the European Union as a central identification strategy.

To this end, Razin and Wahba (2015) decompose bi-lateral migration sample into three groups as follows. Group A (EUR to EUR) contains only the source-host pairs of countries, which allow free mobility of labor between them, according to the Schengen agreement. Razin and Wahba (2015) find that a more generous welfare state tilts the skill composition downward under free migration and upward under policy-controlled migration. Regardless whether migration is free or controlled, a higher Gini generates greater income distribution and consequently more skill-biased immigration.¹⁴ In Razin et al. (2002) the dependency effect of unskilled migrants on the welfare-state policy depends on two contrasting driving forces. On the one hand, the effect is negative because a rise in the dependency ratio increases the fiscal burden on the median voter. On the other hand, the dependency-ratio effect on policy is positive to the extent that the median voter preference shifts towards the group of voters who are net beneficiary of the welfare state. In the present context of two

¹⁴ Under a free-migration regime, the skill-composition of immigration depends also on the skill-distribution of the labor force in the sending and receiving countries. In a seminal paper, George Borjas (1987) derived the conditions under which immigrants are negatively, or positively, selected in terms of skills. Borjas (1987) analyzes some conditions which favor negative selection—meaning that immigrants are drawn disproportionately from the bottom half of the skill distribution. They are: high returns to skills in the sending country relative to the receiving country, and migration costs that are proportional to worker productivity (for example, costs that have an iceberg form), which combine to give less skilled workers a relatively strong incentive to migrate. On the other hand, migration costs that are fixed in nature and a marginal utility of income that is not strongly decreasing favor positive selection of immigrants in terms of skills (Grogger and Hanson 2011), in which case immigrants are drawn more heavily from the top half of the skills distribution.

skill levels, the effects of a rise in the dependency ratio on the welfare-state generosity policy is negative if the high skill are in the majority, and positive if the low skill are in the majority.¹⁵

Notwithstanding the great insights arising from the above-mentioned literature, complex interactions among the driving forces are to be further explained in only a general equilibrium framework. The paper addresses the general-equilibrium interactions in a majority-voting analytical framework.

2 ECONOMY-WIDE GAINS FROM MIGRATION

We first present the textbook case for free migration in the absence of redistribution, in order to “set the table” for the analysis.

Like international trade in goods, there are gains and losses from the opening of national borders to labor mobility. A simple figure (Figure A) can serve to illustrate the gains from immigration in our model. For concreteness, we illustrate the gains to the native-born from low-skilled immigration. For simplicity, we assume that there are no taxes or benefits.

The downward-sloping curve in this figure is the marginal product of high-skilled labor. This curve is also the demand for this type of labor.

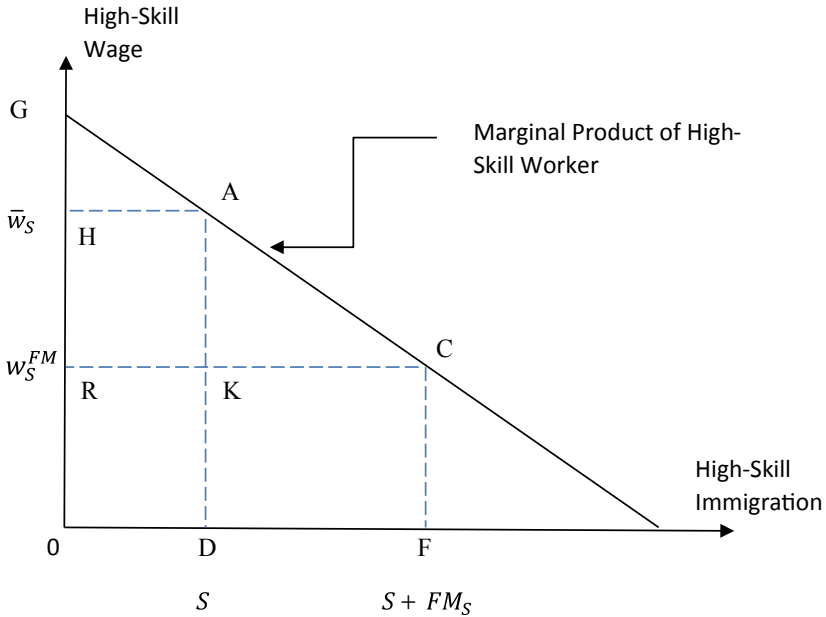
There are S native-born high-skill laborers. The number of high-skilled immigrants under free immigration is FM_s .

In a closed economy with no immigration, the equilibrium high-skilled wage is w_s .

GDP is equal to the area OGAD, of which the area HGA goes to the high-skill native-born individuals and the area OHAD goes to the low-skill native-born individuals.

¹⁵ Interest-group arguments in political science date back more than a century. From the pioneering works of Arthur F. Bentley (1908), V.O. Key, Jr. (1943) to David B. Truman (1951). Group models of politics search for propositions about how and when individuals coordinate their activities and engage in collective behavior (Olson 1971). Work in this vein commonly attempts to link policy demands to concrete (or expected) gains and losses of identifiable sub-groups of the electorate, and to the bargains and concessions, they produce in pluralistic political systems. Interest-group approaches have focused on a broad array of groups positioned for or against immigration (Freeman 1995; Gimpel and Edwards 1999; Haus 1995; Joppke 1999; Watts 2002).

The Gains from a High-Skill Immigration



Suppose the high-skill immigrants face a reserve wage of w_s^{FM} in their countries of origin, which is below the threshold \bar{w}_s . If we allow for free immigration then FM_s high-skilled immigrants will come. The equilibrium wage will be: w_s^{FM} . GDP increases to $OGCF$ (for both native-born individuals and immigrants).

The increase is measured by the area $DACF$.

A part of this increase (the area $DKCF$) goes to the low-skilled immigrants, so that the total gains to all the native-born individuals is the area is AKC . However, not all native-born individuals gain. The income of high-skill native-born individuals drops to the area $ORKD$, so that they lose the area $HAKR$. On the other hand, the income of the high-skill native-born individuals exceeds the loss to the low-skill native-born individuals.

Therefore, with a perfect, non-distortionary system of redistribution (via lump sums), the high-skilled native-born individuals can more than compensate the low-skilled native-born individuals, so that all native-born individuals can gain from migration.

If the immigration of high-skill individuals triggers either productivity gains (through external effects) or an increase in infrastructure investment (through policy effects), the marginal productivity curve would shift outward. Therefore, the wage of high-skill individuals under free immigration need not fall.

Because a redistribution system (via wage taxation) is distortionary, the compensation possibilities are limited. It is not always the case that all native-born individuals gain from immigration. A similar conclusion holds in the case of high-skilled immigration.

A striking result in this chapter is that the migration supply shock benefits all income groups despite the distortionary redistribution system, and driven by political-economy forces.

3 STYLIZED MACROECONOMIC MODEL

We develop a two-period political-economy model, capturing skill based immigration policy jointly with welfare-state redistribution policy, that are determined through majority voting.¹⁶ The government provides a uniform social benefit. Capital income tax is proportional whereas the average rate of the labor income tax progresses from low-skilled wage to high-skilled wage.

3.1 *Income Groups*

In order to consider redistribution issues, which are at the heart of the welfare state, we assume that there minimally are two types of individuals—low skilled-poor (indexed u) and high skilled—rich (indexed s). The workers have two types of skills—low (l) and high (h). There are

¹⁶The model draws on Razin et al. (2019). The framework consists of two skill levels in a Heckscher-Ohlin setting where factors of production are perfectly mobile across sectors. Using public opinion polls conducted in the United States, Steve and Slaughter (2001) and O'Rourke (2003), find support for hypotheses derived from the Heckscher-Ohlin trade model. Specifically, they find that there is a robust skills cleavage over immigration policy, with highly skilled workers being less likely to support restricting immigration policies and low-skilled counterparts more likely to do so; and these effects of immigration on workers at different skill levels are consistent with the model. Their findings suggest 'the potential for immigration politics to be connected to the mainstream redistributive politics over which political parties often contest elections.

three types of factors of production—capital (K) high-skilled labor (L_H), and low-skilled labor (L_L).¹⁷

Each high-skill individual is endowed with \bar{x}_s units of good x , and \bar{y}_s units of good y , respectively, in the first period; a low-skill individual is endowed with only $\theta < 1$ units of a skilled individual's wealth endowment. Thus, a skilled-rich individual enjoys both higher initial endowment (“wealth”), and higher labor market skill than the unskilled-poor individual.

Ageing leads to increasing dependency ratio—the ratio of retirees to workers—which is the main driving force in our analysis.

To capture the essence of ageing, we assume an idiosyncratic shock in the second period so that, with certain likelihood the individual retires from work.

The overall size of the initial native-born population is normalized to one, where a proportion λ of the population is of high skill and a proportion $1 - \lambda$ is of low skill. We denote by m_s the number of high-skill migrants and by m_l the number of low-skill migrants. We denote the number of high-skill immigrants, m_S , and low-skill immigrants, m_L .

3.2 Dependents

The welfare state provides universal social benefits, paid by tax on labor income and tax on capital income. There are two periods. We assume that everyone works in the first period. As for the second period, with a probability ϕ , an individual is out of work, earning no wage income. The individual draws on the earned income which is saved from the first period. We label this individual as dependent, because relative to others in the same skill group, the individual spending draws more from the welfare-state social transfers. To capture dependency on the social insurance through retirement, unemployment, disability, etc., we assume that there is an individual idiosyncratic shock. The probability of non-work realization is also the share of dependents in the population. Because

¹⁷When confining consideration to factor rewards, under the standard complementarity—substitution specification of production functions, low skill labor, and capital, benefit from high skill immigration, whereas high skill labor loses. However, such narrow benefit-lose calculation abstracts from the general-equilibrium effect factor allocation across sectors, international capital flows and from the fiscal aspects associated with the welfare state.

migrants typically come in young and productive, the non-working shock does not apply to them.

The individual utility function in all income groups depends on private consumption and the provision of social benefit (consumed across income groups equally).

$u = (c_x)^\alpha (c_y)^{1-\alpha} + dB^\gamma$, where c_x and c_y are private consumption of good x and good y respectively, and B denotes the amount of social benefit. The latter is an amalgam of public education, health care, etc. For simplicity we assume that B is supplied only in the second period.

3.3 Immigration

Immigrants, who bring with them no capital, consume only in the second period, and their utility function is given by:

$$u = (c_{x2})^\alpha (c_{y2})^{1-\alpha} + dB^\gamma$$

Consumption functions are:

$$c_{xmS2} = a(1 - t_{LS})(w_H), \text{ and} \quad (1a)$$

$$c_{ymS2} = (1 - a)(1 - t_{LS})(w_H/p) \quad (1b)$$

$$c_{xmL2} = a(1 - b)(1 - t_{LL})(w_L), \text{ and} \quad (1c)$$

$$c_{ymL2} = (1 - a)(1 - b)(1 - t_{LL})(w_L/p) \quad (1d)$$

where t_{LS} and t_{LL} denote wage proportional wage tax rates on high-skill and low-skill, respectively. B , Z , z stand for social benefit, constant factor in migration function, elasticity term in the migration function, respectively. p stands for the relative final-good price.

The exogenously given pair u_H^* , u_L^* of utility levels attained by S -individuals and L -individuals, respectively, in foreign residence. The number of high skilled immigrants depends positively on the foreign-domestic utility differential, $u_{sm} - u_S^*$; and number of low skilled immigrants depends positively on the foreign-domestic utility differential $u_{Lm} - u_L^*$.

Under the free migration regime, the number of migrants are determined as follows.

$$\begin{aligned} m_H &= Z_H (u_{mH} - u_H^*)^{z_H} && \text{with } Z_H > 0, 0 < z_H < 1. \\ m_L &= Z_L (u_{Lm} - u_L^*)^{z_L} && \text{with } Z_L > 0, 0 < z_L < 1. \end{aligned} \quad (2)$$

For consistency, under a controlled-migration regime, m_H and m_L are policy controlled variables. The migration quotas must be chosen so that

$$u_{mH} - u_H^* > \left(\frac{m_H}{Z_H} \right)^{-z_H}, \text{ and } u_{mL} - u_L^* > \left(\frac{m_L}{Z_L} \right)^{-z_L} \quad (3)$$

3.4 *Production and Investment*

To enable us to consider trade in goods we assume that there minimally are two tradable goods (x and y). In the absence of uncertainty and differentiated products, each sector will either export or import its standard product, but not both at the same time. World prices of x and y are exogenously given for our small open economy with good x serving as a numeraire, whose price is normalized to one, and the world price of y is denoted by p^* . There is an impediment to trade in goods. Specifically, goods can be exported, but again only at some border related friction cost (e.g., country specific standards, regulations, etc.). For concreteness of the notation, we consider y as an export good. A similar and straightforward notation applies when x is the export good.¹⁸ We denote this cost per unit of price by δ_y , so that the domestic price of the export good y is

$$p_t = \frac{p^*}{(1 + \delta_y)}. \quad (4)$$

A representative firm produces well g according to a constant-returns-to scale technology:

$$g = A_g F_g(K_g, L_{Hg}, L_{Lg}) = A_g K_g^{\alpha_g} L_{Hg}^{\rho_g} L_{Lg}^{1-\rho_g-\alpha_g}, \quad g = x, y, \quad (5)$$

¹⁸By the Lerner Symmetry proposition, any wedge between the domestic and the world prices applied to importable goods, is equivalent to a wedge between world and domestic prices applied to exportable goods.

where, K_g is the input of physical capital, and L_{Hg} is high-skill labor, and L_{Lg} is low-skill labor, used in the respective production process. $A_g > 0$ Is a total factor productivity coefficient, and α_g , ρ_g , and $1 - \rho_g - \alpha_g$ are, respectively, the capital, high-skill labor, and low-skill labor shares in the sector producing g .

Capital is employed together with labor in the first period with output generated in the second period. We assume that labor is paid in the second period, at the end of the production process.

Capital (K) is a composite good, produced in the first period based on a variable mix of x_k and y_k , according to:

$$K = x_k^\beta y_k^{1-\beta}, \text{ where } 0 < \beta < 1. \quad (6)$$

To find the cost minimizing mix of x and y , of which a unit of capital (K) is composed of, one, has to solve the following problem:

$$\min_{(x,y)} (x_k + p_1 y_k)$$

Subject to:

$$x_k^\beta y_k^{1-\beta} \geq 1,$$

where p_t is the domestic price of y in period $t = 1, 2$.

Solving this problem yields also the unit price p_k of capital as

$$p_k = D p_1^{1-\beta}, \quad (7)$$

where $D = (\frac{1-\beta}{\beta})^\beta + (\frac{\beta}{1-\beta})^{1-\beta}$.

Demands for labor and capital are given, respectively, by the marginal productivity conditions in both sectors. Note that because labor and capital move freely between the two sectors, then the factors of production earn the same remuneration across sectors, that is:

$$\begin{aligned} w_H &= (\rho_x) A_x k_{Hx}^{\alpha_x} l_{Lx}^{1-\rho_x-\alpha_x}, \\ w_H &= p_2 (\rho_y) A_y k_{Hy}^{\alpha_y} l_{Ly}^{1-\rho_y-\alpha_y} \end{aligned} \quad (8a)$$

$$\begin{aligned} w_L &= (1 - \alpha_x - \rho_x) A_x k_{Hx}^{\alpha_x} l_{Lx}^{-\rho_x-\alpha_x} \\ w_L &= p_2 (1 - \alpha_y - \rho_y) A_y k_{Hy}^{\alpha_y} l_{Ly}^{-\rho_y-\alpha_y} \end{aligned} \quad (8b)$$

$$p_k(1+r) = \alpha_x A_x k_{Hx}^{\alpha_x-1} l_{Lx}^{1-\rho_x-\alpha_x} \quad (9)$$

$$p_k(1+r) = p_2 \alpha_y A_y k_{Hy}^{\alpha_y-1} l_{Ly}^{1-\rho_y-\alpha_y} \quad (10)$$

Equations (9) and (10) are the familiar first-order, maximizing-profit conditions, for a firm which raises funds at rate $1+r$, in the first period, to invest in capital which it can buy at p_k .

where k_g is the capital-labor ratio in sector g , that is $k_{Hg} = \frac{K_g}{L_{Hg}}$; $l_{Lg} = \frac{L_{Lg}}{L_{Hg}}$; w_H is high-skill wage rate, paid in the second period (after the completion of the production process); and w_L is low-skill wage rate, paid in the second period after the completion of the production process. Note that for simplicity we assume that capital fully depreciates at the end of the production process.

3.5 Saving Behavior

We denote by c_{gi1} the consumption of good $g = x, y$ by an individual of type $i = u, s$ in period $t = 1, 2$. All native-born individuals have identical preferences, given by

$$u_i = (c_{xi1}^a c_{yi1}^{1-a})^b (c_{xi2}^a c_{yi2}^{1-a})^{1-b} + dB^\gamma, \quad (11)$$

where, $0 < a < 1$, $0 < b < 1$, $d > 0$, $\gamma > 0$, and B is a uniform social benefit (provided in an equal amount to all individuals), assumed (for simplicity) to be provided in the second period only. This social benefit captures the various ingredients that a welfare state provides, such as health services, education, in-kind transfers, etc. Note that the social benefit is not a perfect substitute to private consumption.¹⁹

The consumption basket remains the same across period 1 and 2. Therefore, we can aggregate consumption goods into a consumption

¹⁹In our model, the redistribution made by the welfare state is in the form of an in-kind benefit. There are other aspects of the social insurance system that we abstract from. For example, in Europe the welfare system is more in the tradition of Beveridge (based on universal at benefits). In some non-European countries, the system is mainly Bismarkian (based on benefits related to past contributions). Since social contributions are related to individual incomes, the more Beveridgean welfare systems have a higher implicit income redistribution. See Cremer and Goulão (2014).

composite:

$$C_t = C_{xt}^a C_{yt}^{1-a}, \quad t = 1, 2$$

The composite price is $p_t = \Gamma_p p_{xt}^a p_{yt}^{1-a}$

With,

$$\Gamma_p = \frac{1}{a^a (1-a)^{1-a}}, \quad t = 1, 2.$$

The (two-state) idiosyncratic shock ϕ , which occurs in the second period, is indexed ε , where, $\varepsilon = W$, if the individual works, or $\varepsilon = R$, if the individual retires from work; with the probability of the non-working state, ϕ , and the probability of the working state, $1 - \phi$.

The Individual household i seeks to maximize the expected utility

$$U_i = C_{1i} + \beta \mathbf{E}_\varepsilon [\mathbf{log} C_{2i}(\varepsilon)], \quad (12)$$

Subject to

$$C_{1i} + S_{1i} = \bar{x}_i + p\bar{y}_i, \quad \text{and}$$

$$S_i [1 + (1 - t_k)r] + (1 - t_{Li})w_i = p_2 C_{W2}, \quad \text{if } \varepsilon = W$$

$$S_i [1 + (1 - t_k)r] = p_2 C_{R2}, \quad \text{if } \varepsilon = R,$$

where, the proportional tax on labor income is t_{Li} , and the capital income of residents and foreigners (from domestic sources only) is taxed at a flat rate t_k ; C_{it} represents period- t consumption spending, S_i denotes period-1 domestic saving of individual I , and \mathbf{E}_ε denotes the expectation operator for the distribution function of the non-working shock ε ; $I = S, L$.

3.6 Capital Flows

Recall that, in order to mitigate adverse macroeconomic impact of ageing, the welfare-state fiscal prospects depend on two factors. The first is the potential for capital deepening. The second is increased immigration. Domestic capital deepening depends on in and out capital flows.

As usual, capital flows are driven by net-of-tax rates of return. Capital does flow internationally, but at some cost $\delta_k > 0$ per unit. The net return on investing into domestic capital is $1 + r(1 - t_k)$ for investors, where r is the domestic interest rate. A domestic individual who invests abroad can thus gain only $1 + (1 - t_k^*)r^* - \delta_k$, where r^* is the world interest rate and t_k^* is the tax rate, levied abroad under a source-based taxation. In a small, open economy context, the two (exogenous) variables t_k^* and r^* play an equivalent role, so the only relevant variable is $R^* = (1 - t_k^*)r^*$, which is the net of tax international interest rate. We assume that the cost of capital flows applies symmetrically to foreign investors, i.e. their return on investment in the domestic country is given by $1 + (1 - t_k)r - \delta_k$, where investing abroad yields a return R^* .

The small open economy exports capital in case:

$$(1 - t_k)r = R^* - \delta_k \quad (13a)$$

This means that $(1 - t_k)r - \delta_k < R^*$, and therefore foreigners do not invest in the domestic economy.

Similarly, the small open economy imports capital in case:

$$(1 - t_k)r - \delta_k = R^*. \quad (13b)$$

This means that $(1 - t_k)r > R^* - \delta_k$, and therefore the residents of the small open economy do not wish to invest abroad.

3.7 *Current Account*

First-period current account surplus is given by:

$$(1 - \lambda)(\bar{x}_u + p_1\bar{y}_u) + (\lambda)(\bar{x}_s + p_1\bar{y}_s) - (1 - \lambda)(c_{xu1} + p_1c_{yu1}) - (\lambda)(c_{xs1} + p_1c_{ys1}) = [(1 - \lambda)S_u + (\lambda)S_s] - p_k(K_x + K_y) \quad (14)$$

Note that when the country exports capital (that is, $(1 - \lambda)S_u + (\lambda)S_s > p_k(K_x + K_y)$), then it incurs the cost of δ_k on its capital exports. Conversely, when foreigners invest in the domestic economy (that is, $(1 - \lambda)S_u + (\lambda)S_s < p_k(K_x + K_y)$), then the country pays foreigners only $1 + (1 - t_k)r$, because they are taxed on their income originating in the domestic economy; foreigners bears the friction cost δ_k in this case.

Second period resource constraint is given by:

$$(1 - \lambda)(c_{xu2} + p_2c_{yu2}) + (\lambda)(c_{xs2} + p_2c_{ys2}) + m_H(p_{xm}S_2 + c_{ym}S_2)$$

$$\begin{aligned}
& + m_L(p c_{xmL2} + c_{ymL2}) + d c_{dep} + (1 + m_L + m_H + d)B \\
& = F_x(K_x, L_x) + p_2 F_y(K_y, L_y) + [(1 - \lambda)S_u + (\lambda)S_s - p_k(K_x + K_y)]I_{CF}
\end{aligned} \tag{15}$$

$$I_{CF} = C \begin{cases} 1 + R^* - \delta_k & \text{if } (1 - \lambda)S_u + (\lambda - m_s)S_u \geq p_k(K_x + K_y) \\ 1 + (1 - t_k)r & \text{if } (1 - \lambda)S_u + (\lambda - m_s)S_u \leq p_k(K_x + K_y) \end{cases} \tag{16}$$

3.8 Policy Instruments

Finally, consider the government, which is active in a balanced-budget way only in the second period. Its budget constraint is:

$$\begin{aligned}
& (1 + m_H + m_L + d)B \\
& = t_{LL}(w_L(1 - \lambda)\phi + m_L) + t_{LS}w_S(\lambda\phi + m_S) + t_k r p_k(K_x + K_y)
\end{aligned} \tag{17}$$

Note that the government taxes capital income of both domestic residents and foreigners which originates in the domestic economy, $r p_k(K_x + K_y)$. This means that when saving of domestic residents exceeds domestic investment, $p_k(K_x + K_y)$, with the excess invested abroad, then this excess is not taxed at home. Conversely, when savings of domestic residents fall short of domestic investment, $p_k(K_x + K_y)$, with the shortage financed by foreigners, then this shortage is taxed by the domestic government.

The available policy instruments are the number of high-skilled migrants, m_H , the number of low-skilled migrants, m_L , the labor income tax rates, t_{LS} and t_{LL} (proportional wage tax rates on high-skill and low-skill, respectively), the capital income tax rate, t_k , and the scale of the social benefit, B . Labor income tax is progressive (measured by the difference in the average rate differential $t_{LS} - t_{LL} > 0$), whereas capital income tax (t_k) is proportional.

Note also that the government taxes capital income of both domestic residents and foreigners which originates in the domestic economy, $r p_k(K_x + K_y)$. This means that when saving of domestic residents exceeds domestic investment, $p_k(K_x + K_y)$, with the excess invested abroad, then this excess is not taxed at home. Conversely, when savings of domestic residents fall short of domestic investment, $p_k(K_x + K_y)$, with the shortage financed by foreigners, then this shortage is taxed by the domestic government.

We abstract from a tax on the initial endowments because these are in fixed supply at the beginning of the first period, and a tax on them is not distortive; it will tend to be extremely high. Furthermore, when the low-skill form the majority, they will tax them at a rate of 100%. For a similar reason, we abstract also from a tax on consumption (VAT) because it is equivalent to a tax on wages (which are taxed directly in our model), and a tax on the initial endowments (see, for instance, Frenkel et al. 1992).

4 MODEL'S PREDICTIONS

To capture the effect of ageing (that is, a rising *share of dependents* with the ϕ -parameter) on social insurance, the composition of taxes, and the skill gap of immigration, resort to numerical simulation.

4.1 Majority Determined Policy

In the following Figures we compare the high skilled regime policies with the low-skilled regime policies, through varying the retirement-likelihood parameter, ϕ .

Figure 1 demonstrates that,

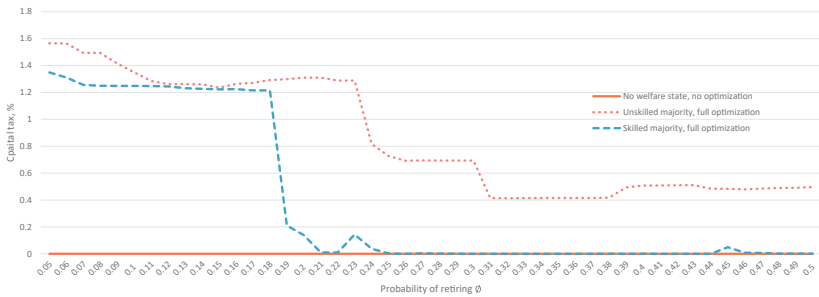


Fig. 1 Capital income tax: high skilled majority vs. low-skilled majority (*Source* Simulations based on the model in this chapter Appendix. *Note* For ϕ -parameter values falling short of 0.2 the economy imports capital. For ϕ -parameter values exceeding 0.35 the economy exports capital. For ϕ -parameter values in between 0.2 and 0.35 the economy is in financial autarky. For the model's parameter values, see Appendix)

1. The capital tax rate set by the high-skilled majority is lower than the rate set by the low-skilled majority. The capital tax rate is set equal to zero by the high-skilled majority if the country is capital exporter.
2. Increasing the ϕ -parameter lowers the capital tax rate set by the high-skilled majority if the country is capital exporter. Increasing the ϕ -parameter lowers the rate of tax on capital by the low-skilled majority, regardless of whether the country exports or imports capital.

Figure 2 demonstrates that,

1. The low-wage tax rate set by the high-skilled majority is higher than the rate set by the low-skilled majority.
2. Increasing the ϕ -parameter raises the low-wage tax rate by both the high-skilled and low-skilled regimes.

Figure 3 demonstrate that,

1. The high-wage tax rate set by the high-skilled majority is lower than the rate set by the low-skilled majority.

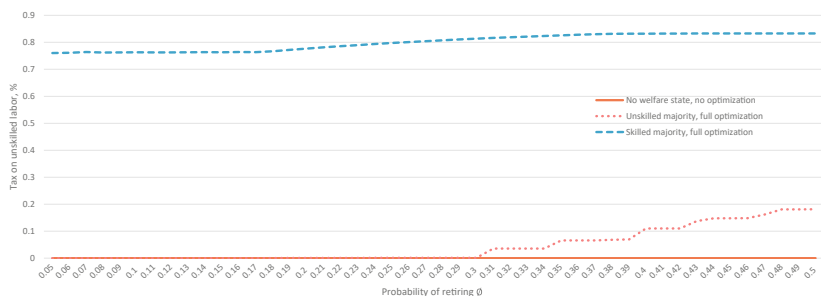


Fig. 2 Low-wage tax rate: high skilled majority vs. low-skilled majority (*Source* Simulations based on the model in this chapter Appendix. *Note* For ϕ -parameter values falling short of 0.2 the economy imports capital. For ϕ -parameter values exceeding 0.35 the economy exports capital. For ϕ -parameter values in between 0.2 and 0.35 the economy is in financial autarky. For the model's parameter values, see Appendix)

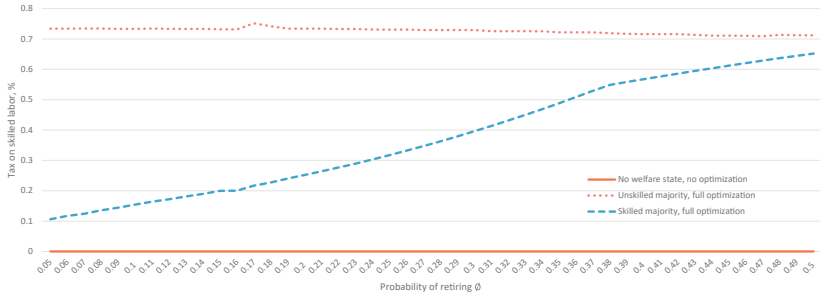


Fig. 3 High-wage tax rate: high skilled majority vs. low-skilled majority (*Source* simulations based on the model in this chapter Appendix. *Note* For ϕ -parameter values falling short of 0.2 the economy imports capital. For ϕ -parameter values exceeding 0.35 the economy exports capital. For ϕ -parameter values in between 0.2 and 0.35 the economy is in financial autarky. For the model's parameter values, see Appendix)

2. Increasing the ϕ -parameter raises the high-wage tax rate by the high-skilled but lowers the rate set by low-skilled regime.

Figure 4 shows that,

1. The high-skilled regime provides greater social benefits than the low-skilled regime (except for very low values of the ϕ -parameter where the provision is similar).
2. Increasing the ϕ -parameter raises social-benefit provision in the high-skilled regime but lowers the provision in the low-skilled regime.

Figure 5 shows that,

1. The high-skilled regime sets positive (and high) the migration quota to low-skilled migrants, whereas the low-skilled regime sets the quota equal to zero.

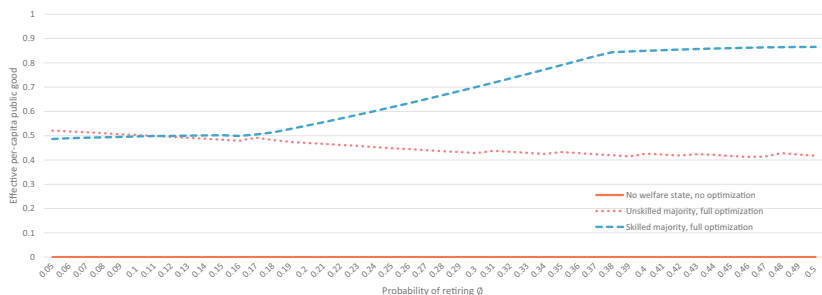


Fig. 4 Provision of social benefits: high-skilled majority and low-skilled majority (*Source* simulations based on the model in this chapter Appendix. *Note* For ϕ -parameter values falling short of 0.2 the economy imports capital. For ϕ -parameter values exceeding 0.35 the economy exports capital. For ϕ -parameter values in between 0.2 and 0.35 the economy is in financial autarky. For the model’s parameter values, see Appendix)

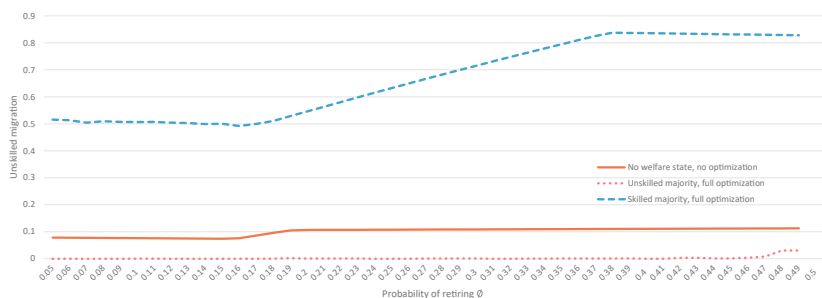


Fig. 5 Low-skilled-migration quota: high-skilled majority and low-skilled majority (*Source* Simulations based on the model in this chapter Appendix. *Note* For ϕ -parameter values falling short of 0.2 the economy imports capital. For ϕ -parameter values exceeding 0.35 the economy exports capital. For ϕ -parameter values in between 0.2 and 0.35 the economy is in financial autarky. For the model’s parameter values, see Appendix)

2. Increasing the ϕ -parameter does not change the low-skilled migration quota if the high-skilled form the majority if the country is capital importer or exporter. Increasing the ϕ -parameter raises the low-skilled migration quota, when the high-skilled form the majority, if economy is in financial autarky.

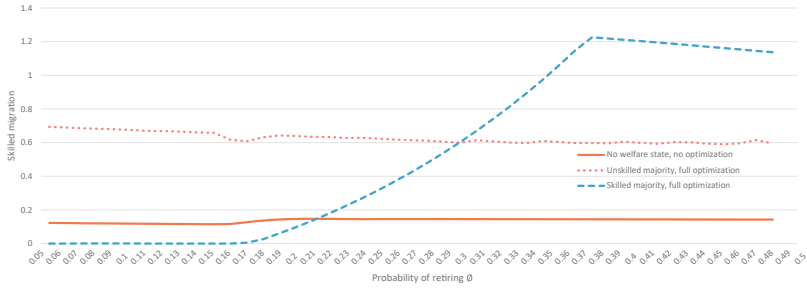


Fig. 6 High-skilled-migration quota: high skilled majority and low-skilled majority (*Note* For ϕ -parameter values falling short of 0.2 the economy imports capital. For ϕ -parameter values exceeding 0.35 the economy exports capital. For ϕ -parameter values in between 0.2 and 0.35 the economy is in financial autarky. For the model's parameter values, see Appendix)

Figure 6 shows that,

1. The quota for high-skilled migration set by the high-skilled regime is zero and the quota set by the low-skilled regime is positive if the country imports capital; If the country exports capital, the quota set by the high-skilled regime exceeds the quota set by the low-skilled regime.
2. Increasing the ϕ -parameter lowers the high-skilled migration quota set by low-skilled regime; increasing the ϕ -parameter lowers the high-skilled migration quota set by the high-skilled regime once the country becomes capital exporter.

4.2 Free Migration vs. Restricted Migration

In the following figures we compare the free-migration regime with the restricted-migration regime, through varying the retirement-likelihood parameter, ϕ .

Figure 7a, where high-skilled form the majority, shows that,

1. The provision of the social benefit exceeds the provision under restricted migration.

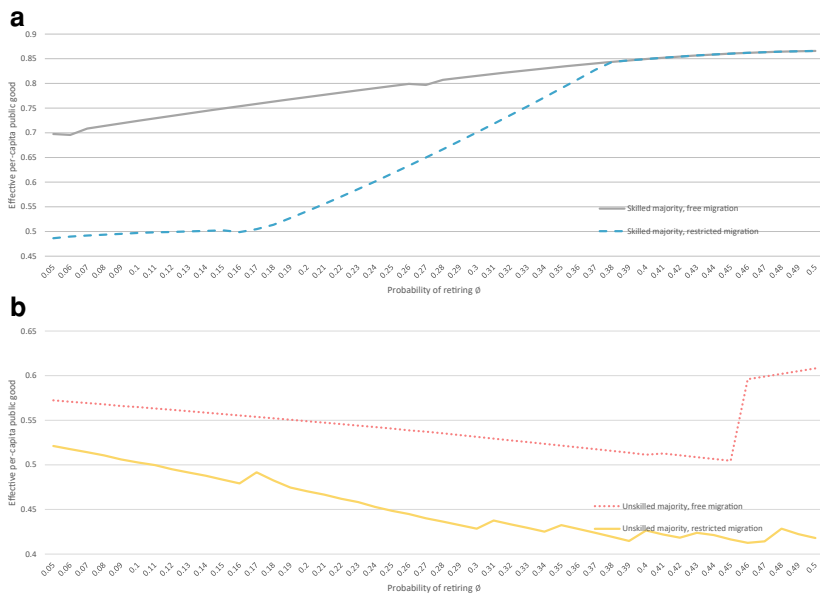


Fig. 7 Provision of social benefit: free migration vs. restricted migration. **a** High skilled form the Majority. **b** Low skilled form the Majority (*Source* Simulations based on the model in this chapter Appendix. *Note* For ϕ -parameter values falling short of 0.2 the economy imports capital. For ϕ -parameter values exceeding 0.35 the economy exports capital. For ϕ -parameter values in between 0.2 and 0.35 the economy is in financial autarky. For the model's parameter values, see Appendix)

2. Increasing the ϕ -parameter raises the provision of the social benefit under both free- and restricted-migration.

Figure 7b, where low-skilled form the majority, shows that,

1. The provision of the social benefit, under free migration, exceeds the provision under restricted migration.
2. Increasing the ϕ -parameter decreases the provision of the social benefit under both free- and restricted-migration as long as the economy does not export capital.

Figure 8 shows that,

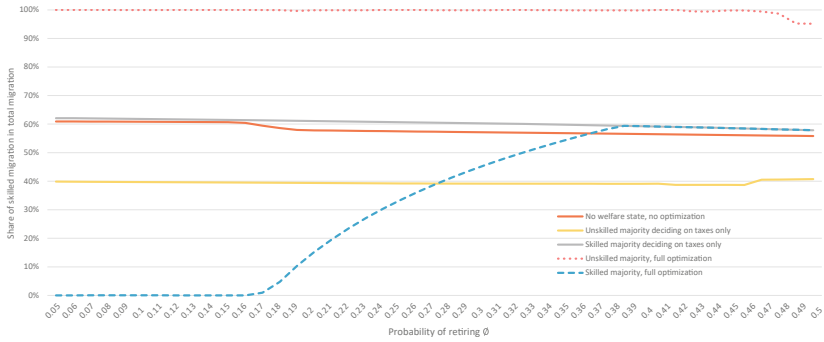


Fig. 8 Share of high-skilled immigration in total immigration: free migration vs. restricted migration (High skilled form the majority, Low skilled form the Majority) (*Source* Simulations based on the model in this chapter Appendix. *Note* For ϕ -parameter values falling short of 0.2 the economy imports capital. For ϕ -parameter values exceeding 0.35 the economy exports capital. For ϕ -parameter values in between 0.2 and 0.35 the economy is in financial autarky. For the model’s parameter values, see Appendix)

1. If the low skilled form the majority which control the welfare-state policy, free-migration share of high-skilled falls short of the migration-restricting regime.

When the high skilled form the majority which control the welfare-state policy, free-migration share of high-skilled exceeds (falls short) of the migration-restricting regime for capital-import (export)country.

4.3 “Shocks” and “Episodes”

We are able to use the current framework to shed analytical light on three “shocks”, as follows.

1. Political shock

A switch from “rich” to “poor” governments.

A motivating episode which is like the UK 1980s–1990s—the change from conservatives to Labour.

2. Globalization shock

The effect of a big increase in δ on B and migration motivating episode which is like the UK Brexit.

3. Productivity shock

An increase in the productivity of high skill labor.

This shock is akin to the skill biased technical change that labor economist talk about reflected in the increase in the skill premium.

5 CONCLUSION

The chapter compares policy regimes, dealing with migration and redistribution Migration quotas of low skilled and high skilled, provision of social benefits, labor income taxation, and capital income taxation—all endogenously determined in a general-equilibrium optimizing framework. Main driving force is ageing of the population. The analysis involves three-way comparisons: free-migration regime differentiated from restricted-migration regime, welfare-state regime distinguished from free-market regime, and low-income-majority regime assessed against high-income-majority regime.

Main patterns, distilled from the analysis, are as follows.

5.1 *Welfare-State Generosity and Migration*

The provision of social benefits by the welfare state declines when the country switches from free- to restricted-migration. In a capital exporting country, which have high demand for high-skill labor, the share of high skilled immigrants in total number of immigrants rises when the country switches from free- to restricted-migration. Social provisions rise with ageing if the high skilled form the majority, and fall if the low skilled form the majority.

The share of skilled migration in total migration rises with ageing across if the high skilled form the majority. The share is set equal to one if the low skilled form the majority. Migration of low skilled rises with ageing if the high skilled form the majority. Migration is wholly prevented if the low skilled form the majority. Migration of high skilled rises with

ageing across if the high skilled form the majority and declines if the low skilled form the majority.

5.2 *Taxation Shifts from Capital to Labor*

First, Capital income tax rate declines with ageing across all policy regimes. Second, the tax rate on low wage rises with ageing across all policy regimes. The tax rate on high wage rises with ageing across all policy regimes.²⁰

The model assumes that voting takes place in the first period; taking account the retirement-likelihood in the second period. An additional consideration associated with ageing ensues. At first sight, one expects that a relatively larger group of elderly will vote for higher transfers, given that these are financed by taxes on the labor income of young workers. However, this outcome may be flipped when a strong ‘fiscal leakage to the elderly’ effect is present. When the population is ageing, a larger fraction of total government budget will accrue to the elderly, even if the median voter is still a young worker. As a result, the young median voter’s marginal benefit from (distortionary) taxation falls and he or she will prefer a lower tax rate.

What if the financing of the welfare state shifts from the current system, based on labor income taxes, to a system based in part on capital income taxes? At first sight, one may think that ageing will lead to lower taxes on capital income given the increased political influence of the elderly, who tend to own more capital than younger voters do. However, it is also possible that if the median voter is a young worker, and if the ‘fiscal leakage’ effect is strong enough, ageing leads to higher taxes.

Turning to the effects of low-skilled immigration, there are two opposing forces, to the extent that immigrants obtain voting rights. On the one hand, low-skilled immigration implies a less wealthy median voter—a force towards a higher tax rate when ageing takes place. On the other hand, there is a ‘leakage to the immigrants’ effect, through which the median voter experiences a reduction in the marginal benefit from raising taxes. This constitutes a force toward a lower tax rate. In most cases, immigration flows are probably too small to have a substantial effect on a country’s welfare state. However, we should recognize

²⁰ Except if the low skilled form the majority where the rate is high for all demographics, which does not show upward trend with ageing.

that many dimensions of the welfare state are often financed at the city level (e.g., schooling) and that immigrant concentration in some cities is high and increasing rapidly. As immigrants (and their descendants) obtain the right to vote in local and regional elections, we should observe large effects on public policies decided at these infra-national levels. However, once again, the opposite result is true when the ‘fiscal leakage’ effect is strong enough. The ‘fiscal leakage’ effect is intimately linked to the specific voting procedure adopted by the authors: majority vote. This voting procedure is the most prevalent in the political economy literature but not the only possible choice. From the theoretical viewpoint, it would be interesting to analyze the robustness of the ‘fiscal leakage effect’ to alternative assumptions on the voting procedure.

APPENDIX: SIMULATION MODEL AND PARAMETER VALUES

To simplify the model in the text, the simulation model has a layered production structure with three inputs, two intermediary goods and one final good in each period. This is without much loss of generality, but simplifies the analysis. The final good in each period serves this purpose.

The final good is produced by a Cobb-Douglas production function. Individuals start with an endowment θ_i of the final good, $I = 1, 2$. The capital good is produced one-to one from the final good, thus reducing the need to track another production function that is not at the core of the analysis.

Preferences are specified as

$$u(c_{i,t}, b) = \frac{c_{i,t}^{1-\sigma} - 1}{1-\sigma} + d_g \frac{(\bar{b})^{1-\gamma_g} - 1}{1-\gamma_g}$$

Provision of social benefit b is:

$$b = \frac{B}{(\sum_i \lambda_i + \sum_m m_m)^{\eta_b}}.$$

B is total government spending on public goods, and $\eta_b \geq 0$ measures to what extent there are congestion externalities in its provision. In particular, for $\eta_b = 0$, the public good would be a pure public good,

and for $\eta_b = 1$, only per-person spending on it would be relevant. By setting the value $\eta_b \in (0, 1)$, we allow for some returns to scale in public goods provision.

<i>Parameter</i>	<i>Value</i>	<i>Description</i>
σ	1.0	Elasticity of intertemporal substitution
γ_g	1.3	CES parameter public goods
d_g	0.5	Weight public good
β	0.5987369392383787	Discount factor
\bar{b}	0.05	Subsistence level of public goods
δ_k	1.0	Depreciation rate
ω_h	0.0	Skilled agents' unskilled endowment
t_k^*	0.2	Foreign capital tax rate
η_b	0.9	Congestion in public goods use
n_u	1.0	Labor endowment unskilled
n_h	1.0	Labor endowment skilled
$n_{u,m}$	1.0	Labor endowment unskilled migrants
$n_{h,m}$	1.0	Labor endowment skilled migrants
p_w^*	1.5	Relative price of goods on the world market
P_w	1.0	Price level abroad
A_w	1.0	MFP final goods abroad
α_x^w	0.5	World market share of x
r^*	3.321942375150668	Interest rate abroad
ξ	0.0	Default risk dependents
μ_u	0.0	Cost of curbing unskilled migration
μ_h	0.0	Cost of curbing skilled migration
μ_{hu}	0.0	Cost of sorting migrants
Δ_y	0.01	Trade wedge
Δ_k	0.01	Capital wedge
γ	-0.30000000000000004	Exponent on public good
d	-1.6666666666666665	Modified weight

Parameters Relating to Domestic Agents

<i>Parameter</i>	<i>Unskilled</i>	<i>Skilled</i>	<i>Description</i>
λ_i	0.5	0.5	Initial population
θ_i	0.1	1.0	Elasticity of immigration
ϕ_i	0.05	0.05	Probability of retiring
\hat{U}_i^*	-10.0	-9.0	Reference utility if migrating abroad
z_i^*	0.5	0.5	Elasticity of emigration
Z_i	0.3	0.3	Scaling factor emigration

Parameters Relating to Potential Immigrants

<i>Parameter</i>	<i>Unskilled</i>	<i>Skilled</i>	<i>Description</i>
Z_m	1.0	1.0	Scaling factor immigration
z_m	0.5	0.5	Elasticity of immigration
U_m^*	-2.255	-2.145	Reference utility of immigrants

Parameters Relating to Production Structure

<i>g =</i>	<i>Factor shares</i>			<i>Other parameters</i>	
	<i>Unskilled labor</i>	<i>Skilled labour</i>	<i>Capital</i>	<i>MFP (A_g)</i>	<i>Demand share (α_g)</i>
<i>x</i>	0.3	0.4	0.3	9.0	0.5
<i>y</i>	0.33	0.33	0.34	9.0	0.5

Other Parameters

Note: An additional layer of production is inserted: Unskilled labor is transformed into unskilled labor services at a rate of 1:1, whereas skilled labor is transformed into skilled labor services at a rate 1:1.5. This ensures that the skilled wage is higher than the unskilled wage. In effect, this is similar to changing n_h to 1.5, but reporting $w_h n_h$ as the effective wage.



Globalization and the Welfare State: Macroeconomics

1 INTRODUCTION

Globalization is expected to be reversed, at least partially, in the post pandemic era. The Great Financial Recession of 2008–2010 marked a historic turning point in the direction of weakening the degree of global economic integration. Now, in the post-pandemic era, policymakers appear poised to take deliberate steps to reinforce the movement toward de-globalization. The post-Covid-19 is expected to be less resilient and more uncertain. This trend may drive up precautionary saving; curtail risky investment projects, thus lowering the return on savings. Demand for social insurance is expected to go up. The post-pandemic economy is likely to have increased redistribution and higher public-private allocation of resources in the economy.

The corona virus pandemic alters the interactions among globalization, migration and redistribution policies. The growing COVID-19 pandemic could strengthen nationalism and isolationism and accelerate the retreat from globalization. The COVID-19 pandemic is driving the world economy to retreat from global economic integration. National security and public health concerns are providing new rationales for de-globalization policies. One aspect of a lack of resilience of the last decades

Draws on research in Razin et al. (2020).

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of globalization to Corona Virus Pandemic is that value (supply) chains were highly vulnerable. They were not sufficiently diversified, and they were sensitive to interruptions caused by either a pandemic like this one or trade conflicts. The recent backlash against trade globalization is not a new phenomenon, either. International trade increased rapidly after 1990, fueled by the growth of a complex network of global value chains (GVCs). These chains represent the process of ever-finer specialization and geographic fragmentation of production. In the wake of the 2008 Global Financial Crisis, uncertainty in the world economy led many firms to reassess their business models. Rather than relying on global supply chains, an increasing number of firms invested in robots, which prompted a renaissance of manufacturing in industrialized countries. The global value chains could be reshuffled, or be reduced. Whether they will be localized or regionalized, or whether the crisis will lead to the continuation of globalization, the expectation is that the COVID-19 crisis will structurally transform globalization on the long-term.

An inspiring study by the political scientist Rogowski (1992) asks why countries differ so greatly in their pattern of political divisions, and ensuing political coalitions, when international trade expands. He argues that the owners of abundant primary factors of production in each country assert themselves politically more when trade globalization intensifies, while owners of scarce factors turn out to be politically defensive. To address these issues he utilizes a standard factor-proportion model (with land, labor, and capital). The model predicts one of three kinds of political cleavages: “class” coalition (labor against land and capital), “urban-rural” coalition (land against capital and labor), or “red-green” coalition (land and labor against capital). Nineteenth century examples are: Germany’s “marriage of iron and rye”, Britain’s “trade liberalism”, and the US “populism”. For a capital-rich and labor-abundant country, where land is scarce, expanding trade benefits both capitalists and workers, but harms landowners. Consequently, both capitalists and workers—the urban sector—favor free trade against the interests of landowners. This helps explain the British trade liberalism. When land and labor are scarce, expanding trade will benefit only capital, and agriculture and labor—the “Green” and the “red”—are expected to unite against trade openness. In “frontier” countries where land is abundant, only agriculture gain from free trade. American farmers try to expand their influence in a “populist” movement of an anti-urban streak.

In the nineteenth century episodes, however, the welfare state was nonexistent. Consequently, social safety nets could have played no role

in lessening political cleavages arising from globalization. In modern times, however, open economies have already welfare-state institutions, put firmly in place. Welfare states are endowed with a tax-benefit arsenal in facing the forces unleashed by the trade-finance integration.¹

The political science literature invokes two hypotheses in relation to the globalization–welfare state nexus: the efficiency hypothesis predicts that globalization reduces government sector size and governments’ capacity to finance the welfare state. The compensation hypothesis, in contrast, predicts that globalization induces a higher demand for social insurance, which results in an extended welfare state. Empirical evidence on the globalization–welfare state nexus is mixed.

The main mechanism, driving the welfare-state-globalization interactions, is international tax competition. Financial and trade integration typically lower the tax on the mobile factor, capital; thus eroding the tax bases associated with capital income, profits, and high-skill labor. The launching of the European Union (EU) provides a “natural experiment”. Accordingly, Caminada et al. (2010) assemble a large set of EU welfare-state indicators. They look at a variety of indicators: of social protection, social expenditures, replacement rates of unemployment, social assistance, and poverty indicators.² Together, these indicators may provide a relatively broad picture of the evolution of social protection in the EU. They demonstrate that the initial level of public social expenditure prior to the

¹There has been an already extensive international-trade literature dedicated to the political economy of commercial policy (e.g., tariffs), which is related to our chapter. See Grossman and Helpman (1994, 2002), Hillman (1982), Levy (1997) Magee et al. (1989) Mayer (1984), Mayer and Li (1994), and Rodrik (1995). Note that our focus in this chapter, however, is on political-economy interactions between globalization (both trade-related and financial-related) and the welfare-state redistributive policies (e.g., labor and capital taxation, and the provision of social benefits). Rodrik (2011) invokes the concept of the political economy trilemma of the world economy, which argues that globalization, national sovereignty, and democracy (the political underpinning of the welfare state) cannot co-exist. There are pressures which operate to limit each one of the three: sovereignty and mass politics work to constrain globalization (e.g., the Bretton Woods world economy with capital controls), globalization and sovereignty constrain democracy (e.g., post 1978 China), and globalization and democracy lead to limitations upon sovereignty (e.g., European Union).

²They linearly regress the annual growth rate of several social protection indexes of EU members on the level of the social protection indicator at the pre-EU period. They find that the coefficient of the social protection indicator at the pre-EU period is negative. The coefficient for absolute β -convergence is found also to be negative. This an evidence suggests an absolute convergence in social protection levels across countries.

creation of the EU has a negative effect on the on EU provision of public social services well after EU has been established. This indicates that countries with above average level of the social protection indicator at the pre-EU period, reduce the provision of social benefits after the launch of the EU; and, countries with below average level of the social protection indicator at the pre-EU period, raise the provision of social benefits after the launch of the EU. They also show that there is absolute convergence towards the bottom in social protection levels across EU countries, possibly because of tax competition forces.

This chapter develops a parsimonious model of small open economy, with a standard welfare-state set-up, where the majority of the voter population govern social policies. The purpose is to shed light on the interactions between globalization and the generosity of the welfare, and its fiscal structure. This chapter further analyzes the trade-globalization effects, and financial-globalization effects, on the distribution of income, and the ensuing welfare-state provision of social benefits, and tax policies. Our analysis suggests that the role of the welfare state in the presence of intensified globalization, and the welfare state's voter attitudes toward openness, depends on rather familiar open-economy fundamentals. They are: (i) Factor abundance and the related factor intensity of the export good; (ii) Import or export of financial assets; and (iii) High-skilled emigration.³ Furthermore, and in connection to the gains-from-trade proposition, we analyze the degree to which the welfare state, governed by the majority of the voter population, is capable of spreading the gains from trade-globalization, and financial-globalization to various income classes, which are different in terms of both labor and capital income.

The organization of the chapter is as follows. Section 2 briefly reviews the topic of border effects, and the trade globalization where the border effects diminish Sect. 3 briefly surveys the topic of international tax competition. Section 4 financial-arbitrage frictions and their effects on the direction, and intensity, of capital flows. Section 5 develops a parsimonious model of the welfare state, trade globalization, and financial globalization. Section 6 presents the model predictions about trade globalization and the welfare state. Section 7 the model presents the model

³High-skilled emigration itself might influence the attitudes of voters towards the generosity of the welfare state.

predictions about trade globalization and the welfare state. Section 8 concludes.

2 BORDER EFFECTS IN INTERNATIONAL TRADE

There exists large body of international trade literature on impediments to trade in goods due to border related friction cost: country specific standards, regulations, technical barriers to trade, together with product-specific information costs, increase border effects. By the Lerner's Symmetry, any wedge between the domestic and the world prices applied to the importable good is equivalent to a wedge between world and domestic prices applied to the exportable good.

The "border effect" in international trade refers to a situation in which there is higher volume of trade within a country compared with the volume of trade across the country's borders. Gravity equations have been widely used to infer trade-flow effects of various institutional arrangements. They have been especially successful to explain the border-effect puzzle. McCallum (1995) estimates a conventional gravity model where bilateral trade between Canadian provinces, or between a Canadian province and US state, should depend on each of their province or state GDP and on distance from the country's centers. His study uses 1988 data, just before the Canada-US free trade agreement was signed. Although trade economists were not surprised at the existence of a border effect, they find significant size of the estimated effect in McCallum (1995) perplexing. Anderson and van Wincoop (2003) study shows why previous empirical studies have had an upward bias in the estimation of the border effect. They argue that border effects have an asymmetric effect on countries of different sizes, and in particular, have a larger effect on small countries. They show previous border-effect estimations suffer from omitted variables bias. They allow the omitted variables in, and find that national borders reduce trade between industrialized countries by still significant amounts of 20–50%. Chen (2004), and Chen and Novy (2011), identify industry-specific trade barriers that are responsible for border effects such as country specific standards, regulations, etc. Fouquin and Hugot (2016) use a gravity theory-grounded measure to create a rich data set of bilateral relative trade costs. The trade costs are aggregated to obtain world indices, as well as indices along various trade routes. They find that the post-WWII fall of trade costs in recent times began in Europe before extending to the rest of the world.

The present chapter focuses on the gradual process of diminishing border effects (that is, the increased intensity of trade globalization) on domestic factor prices and income inequality. For this purpose, our model applies a standard factor proportion (Heckscher-Ohlin) model, except that factors' supply is endogenous in the model. The endogeneity of labor supply stems from the possibility of high-skilled emigration. The endogeneity of capital supply arises from the endogeneity of domestic savings. The model lends itself in a straightforward manner to an analysis of the effect of the world prices of final goods on domestic factor prices a la Stolper and Samuelson (1941). In addition, the model includes a reinforcing effect whereby the change in the domestic factor prices, triggers capital formation through savings a la Rybczynski (1955). Increased trade globalization intensity means simply an exogenous reduction in the wedge between world prices and domestic final good prices. Naturally, these Stolper-Samuelson type changes in domestic factor price trigger a standard reallocation process of domestic factors of production across sectors and affect the prices of domestic factors of production. Furthermore, the ensuing changes in factor prices trigger changes in savings and capital formation. The induced changes in high-skilled emigration and capital formation lead in turn to changes in the factor supply. The latter work through the Rybczynski mechanism on re-configuration of sectoral outputs, and thus, the volume of international trade.

3 INTERNATIONAL TAX COMPETITION

Financial globalization triggers tax competition among countries, and the possibility of a "race to the bottom".⁴ As a result, the tax burden may shift from the highly mobile factors (e.g. capital and top-skilled labor) to the weakly mobile factors (e.g. low-skill labor). This shift has first-order implications for both the functional and the size distribution of income. A country that imposes high tax rates may push mobile factors (especially

⁴The Economist magazine put it succinctly: "Globalization is a tax problem for three reasons. First, firms have more freedom over where to locate. This will make it harder for a country to tax a business much more heavily than its competitors will. Second, globalization makes it hard to decide where a company should pay tax, regardless of where it is based. This gives them [the companies] plenty of scope to reduce tax bills by shifting operations around or by creating transfer pricing. Third, globalization nibbles away at the edges of taxes on individuals. It is harder to tax personal income because skilled professional workers are more mobile than they were two decades ago."

capital) abroad where the country cannot effectively tax them, eroding its own tax base and lowering domestic economic activity at the same time. It may significantly affect corporate financing and location decisions of both US, and European, multinational groups. In consequence, the enhanced competitive pressure could result in an erosion of foreign countries' tax bases and an associated loss in tax revenue triggering a new wave of international tax competition.⁵ Figure 1 gives evidence for the intensity of corporate tax competition following the launch of the European Union.

Assumptions: Equity finance, $r = 4\%$, inflation rate $\pi = 4\%$, $\delta = 20\%$, Normal tax life = 10 years. Countries (from top to bottom): Finland, Sweden, Germany, Austria, UK, Belgium Denmark, France, Italy, Luxemburg, Spain, Portugal, Netherlands, Ireland.⁶

⁵Michael Devereux, Rachel Griffith and Alexander Klemm (2002) analyze the development of taxes on corporate income in EU and G7 countries over the 1980s and the 1990s. They establish that tax revenues on profitable investments had fallen. In particular, taxes on income earned by multinational firms are subject to tax competition forces. Additional evidence pertaining to international tax competition for relatively mobile portfolio investments, so that a country with more mobility has lower capital tax rates, is abundant. See empirical support for the hypothesis in Hines (1999), Sorensen et al (2000), Besley et al. (2001), Devereux and Griffith (2003), and Lassen and Sorensen (2002), Razin et al. (2005), and Krautheim and Schmidt-Eisenhor (2011).

⁶Calculations based on the well-known work of Hall and Jorgenson (1967), who introduced the user cost of capital approach; applied to international data by King and Fullerton (1984). Figure 1 follows the formula for the effective tax rate on corporate income (τ_e), as refined by Auerbach (1983):

$$\tau_e = \frac{(r + \delta)(1 - \tau_s z) - (r + \delta)(1 - \tau_s)}{(r + \delta)(1 - \tau_s z) - \delta(1 - \tau_s)}$$

where

- r Real cost of funds (real rate of return the firm must earn after corporate taxes by the instruction of its shareholders)
- δ physical rate of depreciation (assumed exponential)
- τ_s statutory corporate tax rate
- z Present value of depreciation allowances.

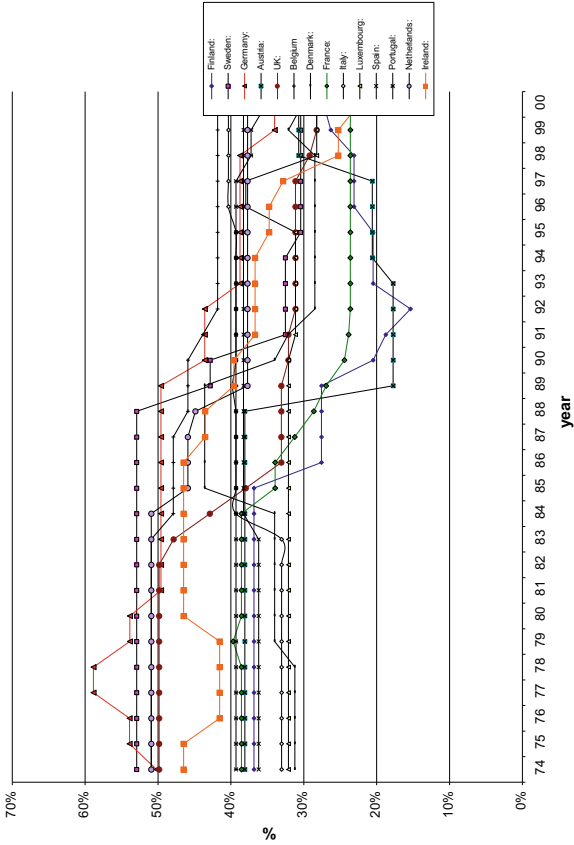


Fig. 1 Hall-Jorgenson effective tax rates on corporate income: selected EU countries (*Source* Simulations based on the model in Appendix. *Notes* Hall and Jorgenson 1967)

4 INTERNATIONAL-FINANCE ARBITRAGE: FRICTIONS

We capture the degree of financial globalization by the ease with which capital flows from one country to another. We assume a pure source-based income taxation. This means that the country does not impose taxes on foreign-source income of its residents, but taxes foreigners on their income originating within the country.⁷

Capital income of residents and foreigners (from domestic sources only) is taxed at a flat rate t_k . Therefore; the net return on investing into domestic capital is $1 + r(1 - t_k)$ for investors, where r is the domestic interest rate.

Assume that capital does flow internationally, but at some cost $\delta_k > 0$ per unit.⁸ A domestic individual who invests abroad can thus gain only

⁷Under the source principle of international taxation only income from domestic sources is subject to a tax, whereas foreign-source income is exempt. Under the residence principle, in contrast, resident income is taxed on a worldwide basis. Razin and Sadka (2017) illustrate diagrammatically the efficiency disadvantage of the equilibrium under the source principle, compared to the residence equilibrium. Because (as in the Diamond-Mirrlees, 1971; the production efficiency proposition) the consumption possibilities frontier shrinks under the source principle, relative to the frontier under the residence principle, the latter is more efficient. However, tax revenue collection tends to be larger under the former, because of the existence of tax havens and lack of sufficient international tax coordination. The tax-competition setup of source taxation is more pronounced in source-taxation than in residence taxation. Note, for instance, that tax competition has little influence on capital taxation under the residence principle with cross-country information sharing.

⁸This cost may generate home bias of investment, as in the case of information asymmetry. See Razin, Sadka, and Yuen (1998). The parameter δ_k captures (albeit in a reduced form) a group of frictions, contractual and informational. Such frictions, which affect the volume, the composition and the volatility of international capital flows, cause deviations from the “law of one rate of return”. As an example, foreign direct investors get more efficient outcomes than foreign portfolio investors do. The reason is that foreign direct investors have direct control over management. Thus, they are able to make a better-informed decision of how to run the business. However, the better information mires FDI investors with the “lemons” problem: If the investors’ liquidity in the source country dries up, forcing the investors to sell off their foreign subsidiaries, market participants would not know whether the subsidiary is liquidated because of the investors’ liquidity problems, or because of bad inside information about the profitability of the subsidiary. Consequently, the market will place a discount on assets sold by an FDI investor, who has the inside information, unlike the foreign portfolio investment, which has no inside information about profitability of the investment. The “law of one rate of return” is not applicable to foreign direct investment because of the “lemon problem”. See Goldstein and Razin (2006).

$1 + (1 - t_K^*)r^* - \delta_k$, where r^* is the world interest rate and t_K^* is the tax rate, levied abroad under a source-based taxation. In a small, open economy context, the two (exogenous) variables t_K^* and r^* play an equivalent role, where the only relevant variable is $R^* = (1 - t_K^*)r^*$, which is the net of tax international interest rate.

We assume that the cost of capital flows applies symmetrically to foreign investors, i.e. their return on investment in the domestic country is given by $1 + (1 - t_K)r - \delta_k$, where investing abroad yields a return R^* .

The small open economy exports capital in case:

$$(1 - t_K)r = R^* - \delta_k, \quad (1)$$

which means that $(1 - t_K)r - \delta_k < R^*$, and therefore foreigners do not invest in the domestic economy.

Similarly, the small open economy imports capital in case:

$$(1 - t_K)r - \delta_k = R^*, \quad (2)$$

which means that $(1 - t_K)r > R^* - \delta_k$, and therefore the residents of the small open economy do not wish to invest abroad.

Remarkably, the foreign tax parameter, t_K^* , with which the domestic tax rate, t_K , competes, and the financial globalization parameter, δ_k , have similar effects on the small open economy when it exports capital; but the opposite effects when it imports capital. Specifically, when t_K^* and δ_k fall, then capital export is boosted in the capital-export case. This is because the net return abroad to domestic savers rises. Therefore simulating the tax competition effect on the welfare state economy of reduced t_K^* is equivalent to the effect of a reduced δ_k ; both indicate that the globalization forces intensify. However, in the capital import case, a fall in t_K^* the net return abroad to foreign savers increases, and therefore capital imports by the domestic economy diminishes. A fall in δ_k however raises the net return for foreign investors in the domestic economy, which boosts capital, imports. Therefore simulating the tax competition effect on the welfare state economy of reduced t_K^* has the opposite effect of a reduced δ_k .

5 SAVING PROPENSITIES AND RELATIVE LABOR ENDOWMENT

Our attention focuses on: (i) the effects of globalization on the volumes of capital flows, the volume of trade, the emigration of high-skill labor, and income distribution. And, (ii) the role of the welfare state, as shaped by majority voting, in enhancing the welfare of many (rather than just a few) income groups in the presence of globalization and tax competition forces.

We utilize Chapter 2 model to put trade and financial globalization, tax competition and the generosity of the welfare state, all in a coherent analytical framework, we develop here a political-economy model, where the welfare state parameters (taxes and social benefits) are determined through majority voting. It is a stripped-down model consisting of the essential (minimal) features, which allow us to analyze these issues.⁹ To enable us to consider trade in goods we assume that there minimally are two tradable goods (x and y). In the absence of uncertainty and differentiated products, each sector will either export or import its standard product, but not both at the same time. World prices of x and y are exogenously given for our small open economy with good x serving as a numeraire, whose price is normalized to one, and the world price of y is denoted by p^* . There is an impediment to trade in goods. Specifically, goods can be exported, but again only at some border related friction cost (e.g., country specific standards, regulations, etc.). For concreteness of the notation, we consider y as an export good. A similar and straightforward notation applies when x is the export good.¹⁰ We denote this cost per unit of price by δ_y , so that the domestic price of the export good y is

$$p_t = \frac{p^*}{(1 + \delta_y)}. \quad (3)$$

⁹The model, which extends the previous section's model to trade, finance, and emigration aspects of globalization, simplifies it regarding the production and the demographic sides. Simplifying assumptions are: (a) high-skilled and low skilled labor are perfect substitutes in production; (b) Only high skilled emigration is allowed, but no immigration; and (c) second-period dependent group is excluded.

¹⁰By the Lerner Symmetry proposition, any wedge between the domestic and the world prices applied to importable, is equivalent to a wedge between world and domestic prices applied to exportable.

Let δ_k be the cost of investing abroad for the domestic and, for simplicity, the same cost for the foreign investors.

Arbitrage for a high-saving, capital-outflow, country:

$$1 + (1 - t_K)r = 1 + (1 - t_K^*)r^* - \delta_k$$

Arbitrage for a low-saving, capital-inflow, country:

$$(1 - t_K)r - \delta_k = (1 - t_K^*)r^*.$$

To consider redistribution issues, which are at the heart of the welfare state, we assume that there minimally are two types of individuals—low skilled-poor (indexed u) and high-skilled—rich (indexed s). There are two types of factors of production—capital (K) and labor (L). The workers have two types of skills—low (l) and high (h). Labor market productivity of the skilled individual is 1 and labor market productivity of the unskilled individual is $\rho < 1$.

Each high-skill individual is endowed with \bar{x}_s units of good x , and \bar{y}_s units of good y , respectively, in the first period; a low-skill individual is endowed with only $\theta < 1$ units of the skilled endowments. Thus, an skilled-rich individual enjoys both higher initial endowment (“wealth”), and higher labor market skill than the unskilled-poor individual.

We study how globalization (as proxied by the friction costs δ_k and δ_y), and how tax competition (as expressed by the tax parameters t_k and t_k^*) affect these two regimes.

To gain insights into how structural factors underlying welfare-state policy play a role in the analysis when trade, and financial, globalization intensifies, it is useful to use the following classification.

1. Capital-endowment rich economy;
2. Labor-endowment rich economy;
3. High-saving, capital-outflow, economy;
4. Low-saving, capital-inflow, economy.

We now proceed with the simulations of the model.

6 TRADE GLOBALIZATION AND WELFARE-STATE POLICIES

In this section we start with the study of trade globalization, income distribution and the welfare state. For this purpose, we shut off the channel of international financial flows in the model. Our focus is on the implications of trade globalization through these effects for income distribution and the ensuing political-economy benefits and taxes. As we shall see, these implications depends on: (i) the factor abundance of our small open economy and the related factor intensity of the export good; (ii) on whether or not there is complete specialization in the export good.¹¹

6.1 *Capital-Abundant Economy*

Suppose that good y is more capital intensive than good x . Suppose further that our small open economy is more capital abundant relative to the rest of the world. This means that the world relative price of y (namely p^*) is higher than the domestic autarky relative price of good y .

Recall that we measure the degree of trade globalization by the parameter δ_y , which is an impediment to trade in goods (Eq. 1). First, we examine how trade globalization affects the income distribution in the absence of the welfare state (that is, $t_L = t_K = B = 0$). Then, we examine how the welfare state responds to trade globalization under the two configurations of political power balance: (i) Skill-rich majority; (ii) Unskilled-poor majority.

With sufficiently high δ_y , the country is in autarky. Naturally, the autarkic relative price of the would-be export good lies below the world relative price. In this range, a decline in δ_y does not affect the domestic

¹¹Schott (2003) points to failure of existing attempts to find support for the idea that a country's endowments determine its production and trade. These attempts have traditionally focused on the overly restrictive, "one size fits all" equilibrium of Heckscher-Ohlin (HO) trade theory. In this view all countries of the world producing all goods, so that both Japan and the Philippines, for example, are assumed to produce identical electronics and apparel goods using the same techniques. A second, far richer equilibrium is possible within the framework, however, in which countries specialize in the particular subset of goods most suited to their mix of endowments, so that relatively labor-abundant Philippines might produce labor intensive t-shirts and portable radios while capital-abundant Japan manufactures capital intensive semiconductors and satellites. Schott (2003) develops a methodology and provides evidence in support of a full-specialization, Heckscher-Ohlin equilibrium.

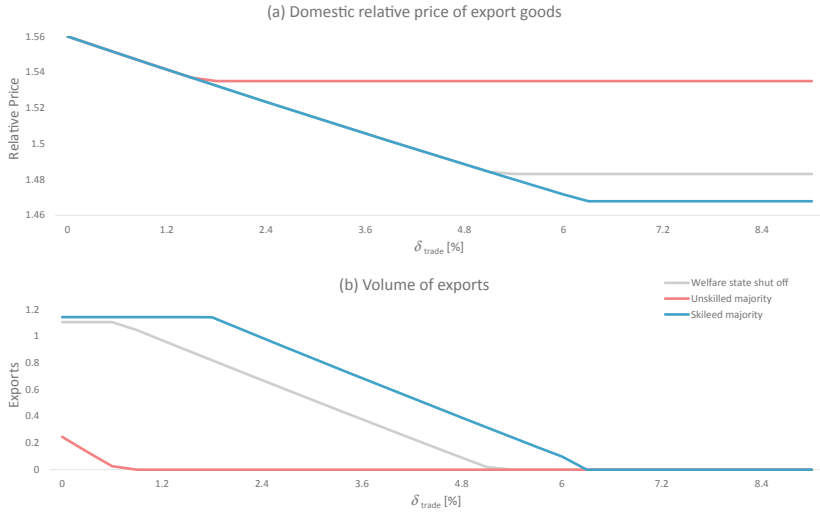


Fig. 2 a, b (The capital-abundant case): exports and prices. **a** The domestic relative price of the export good. **b** The volume of exports (*Source* Simulations based on the model in Appendix. *Note* For parameter values, see Appendix)

prices, as long as the economy is still in autarky. When δ_y continues to fall, the country opens up to trade in goods; it exports good y and imports good x . In this non-autarkic regime, a decline in δ_y raises, as expected, the domestic price of the export good (y) toward the world price p^* (see Eq. 3). Figure 2a shows that as δ_y decreases, the autarky ceases to exist first when the skilled form the majority in the welfare state.¹² As δ_y further declines, then the autarky collapses with the absence of the welfare state; Next, the autarky collapses last (in response to a decrease in δ_y) when the unskilled form the majority in a welfare state. As long as the impediment to trade is strong enough (that is, δ_y is sufficiently high), the volume of exports is flat. As δ_y declines and autarky ceases to exist, export rise in response to the increase in its domestic price, p_2 , as shown in Fig. 2b. As p_2 rises, more labor and capital shift to the export sector (from the importable sector), until complete specialization in the

¹²The levels of δ_y for which there is autarky when the skilled form the majority in the welfare state does not appear in the figure.

export sector occurs (and the importable good is no longer domestically produced).¹³ In accordance with Fig. 2a, complete specialization occurs first when the skilled form the majority in the welfare state. Second, is the no-welfare-state case, and last is when the unskilled form the majority in the welfare state. Regardless of the intensity of globalization, the volume of exports is largest when the skilled-rich form the majority, intermediate in the no-welfare-state case, and smallest when the unskilled-poor form the majority.¹⁴

Panels (a) and (b) of Fig. 2 suggest that when the export good is more capital intensive (relative to the import good) in a capital-abundant country (relative to the rest of the world), then: (i) the skilled-rich are most pro-globalization; (ii) the unskilled-poor are least pro-globalization; and, (iii) the case of no welfare state is in between.

Figure 3 describes the effect of increased trade globalization on the pre-tax factor prices. Parallel to Fig. 1, the flat segments reflect autarky (for high values of δ_y). Once δ_y falls below the autarky threshold, the return to capital rises and the wage falls in response to increased globalization, as predicted by the Stolper-Samuelson mechanism; see Fig. 2a, which shows that the relative price of capital-intensive good rises. When complete specialization occurs (and this happens for our parameter values only in the no-welfare regime, or when the skilled form the majority), then both factor prices rise as the degree of globalization intensifies. Note also that in the case of a one-good production the two-factor prices rise at the same rate—the rate of increase of the domestic price of the export good.

Figure 4 describes the effect of increased globalization on the taxes and the social benefit. There are several patterns to note. First, when the skilled form the majority, they levy taxes on labor only. Analogously,

¹³With full specialization, the factor price ratio, w/r , becomes constant. That is with further changes in δ_K w and r increase by the same proportions, and the intertemporal price that drives saving and capital formation is flat. Therefore, the output of exportable y reaches its upper limit and becomes flat as well. With full specialization, the value of output is py . From Cobb Douglas preferences, agents have constant expenditure shares. That is, price-weighted consumption of exportable is a fraction \emptyset of value of output $pc_y = \emptyset py$, implying $c_y = \emptyset y$. Therefore, if y reaches the upper limit and becomes constant with respect to further changes in δ_K , c_y and exports, $y - c_y$, become flat as well.

¹⁴In the parameter values employed in the simulations, there is no complete specialization when the unskilled form the majority in the welfare state even when there is no trade impediment ($\delta_y = 0$).

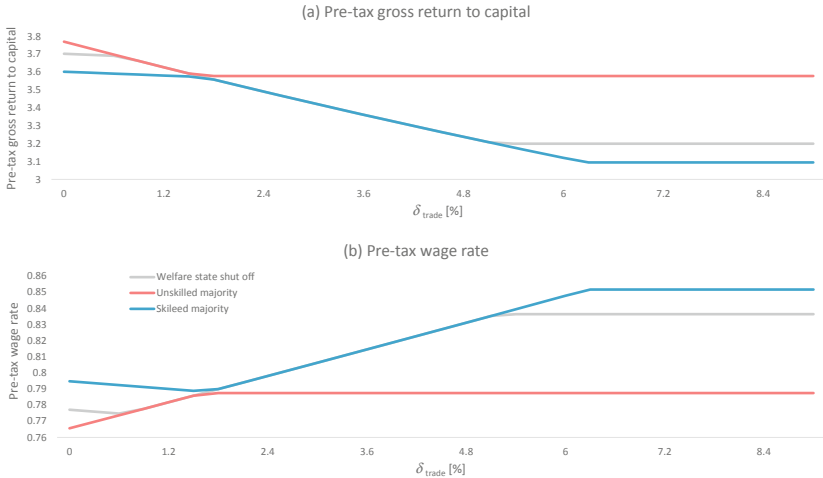


Fig. 3 a, b (The capital abundant case): pre-tax factor prices. **a** Pre-tax gross return to capital. **b** Pre-tax wage rate (*Source* Simulations based on the model in Appendix. *Note* For parameter values, see Appendix)

when the unskilled form the majority, they levy taxes on capital only. This pattern holds even though the two classes own both capital and labor. However, for our parameter values (the skill-premium ρ and the wealth disparity), the skill-rich have higher stake in their capital income, whereas the unskilled-poor have higher stake in their labor income.¹⁵

A second related pattern is that both classes maintain the welfare state when they form the majority. In this regard, we note that the social benefit B is essential as it consists of some goods and services that the market does not provide (e.g., job security, health care, etc.). The third pattern is that, as the degree of globalization intensifies, the tax on labor (respectively, capital) rises when the skilled (respectively, the unskilled) form the

¹⁵One may wonder why there are still tax and social benefit changes in the economy in the autarky state as δ_k falls, for the welfare state regime. The reason is that the pure market forces (indicated by the graph of when the welfare state is shut off) are leading to greater exports. The welfare state reacts in the presence of such market pressures by levying taxes and providing social benefits which exports for a range of values of δ_k , until its value is sufficiently low. At this point, the welfare state gives into the “market forces”, and exports begin to rise.

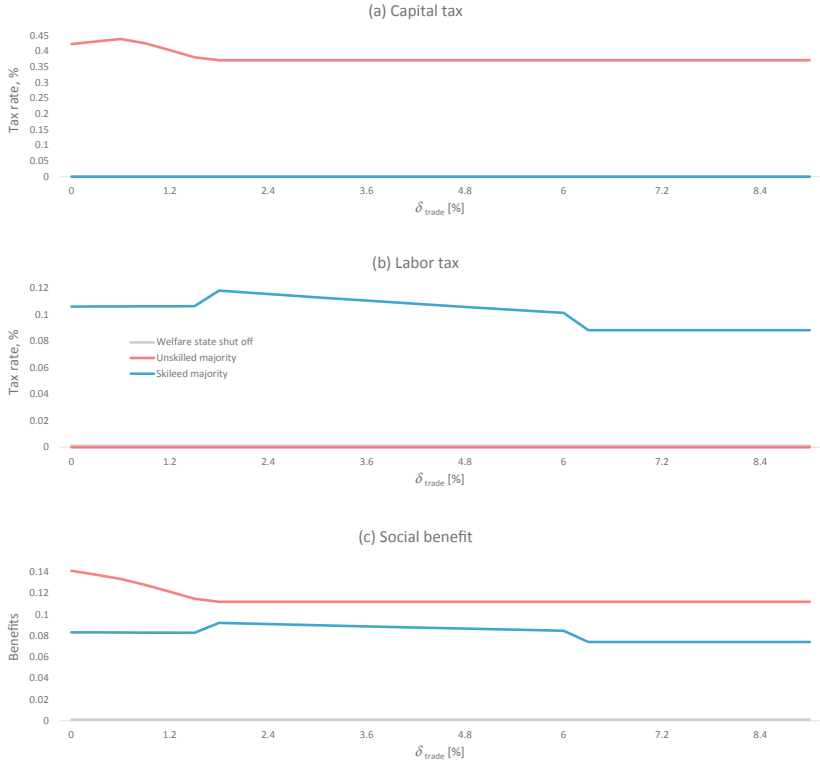


Fig. 4 a–c (The capital-abundant case): taxes and social benefits. **a** Capital tax. **b** Labor tax. **c** The volume of Social benefit (*Source* Simulations based on the model in Appendix. *Note* For parameter values, see Appendix)

majority, and then declines. Indeed each class has an incentive to raise the tax that hurts more the other class, but at some point, the distortion caused by the higher tax stops and reverses the rising trend. When the skill-rich raise the labor tax, the distortion stems from skilled emigration. When the unskilled-poor raise the capital tax, the distortion stems from both the skilled emigration and the reduced savings and capital formation.

Figure 5 describes the effects of increased globalization on the well-being of the two classes. First, in the no-welfare state case, the skilled-rich gain and the unskilled-poor lose as trade globalization intensifies (recall that this is the capital-intensive export configuration). Naturally, a welfare

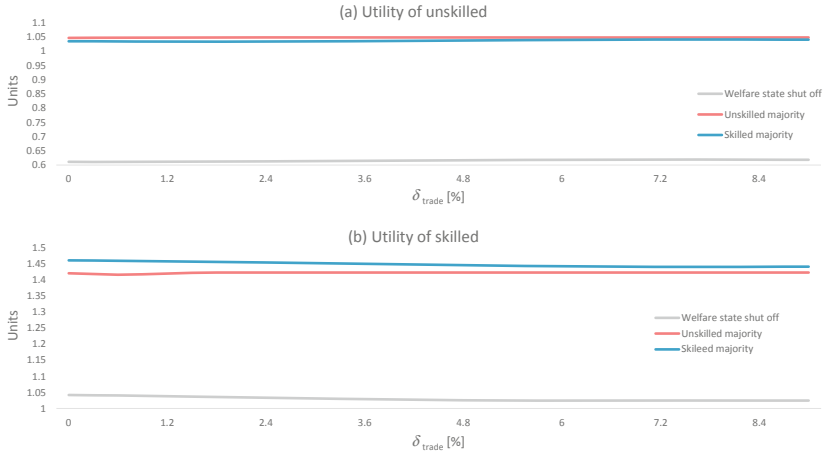


Fig. 5 (The capital abundant case): utilities. **a** Unskilled utility. **b** Skilled utility (*Source* Simulations based on the model in Appendix. *Note* For parameter values, see Appendix)

state, which provides the social benefit B , raises utility for all, independently of who form the majority and of the degree of globalization. When the skilled-rich form the majority, increased globalization hardly affects the unskilled-poor (the welfare state institution therefore mitigates the adverse effect of the globalization forces per se on them), while benefiting the rich themselves. When the unskilled-poor form the majority, they not only no longer lose from increased globalization (as in the absence of a welfare state)—they actually gain. They manage to raise the burden on the skilled to raise their utility, as globalization intensifies.

6.2 Labor-Abundant Economy

We turn now to a different set of parameter values that renders our small open economy to be a labor-abundant relative to the rest of the world. That is the autarky price of the export good which is now the labor-intensive good (good x) is below the world price of that good ($1/p^*$).

As can be seen in Fig. 6, as the degree of globalization intensifies (that is, as δ_x declines), the first departure from autarky occurs when the unskilled-poor form the majority. Next, is the case of no welfare state;

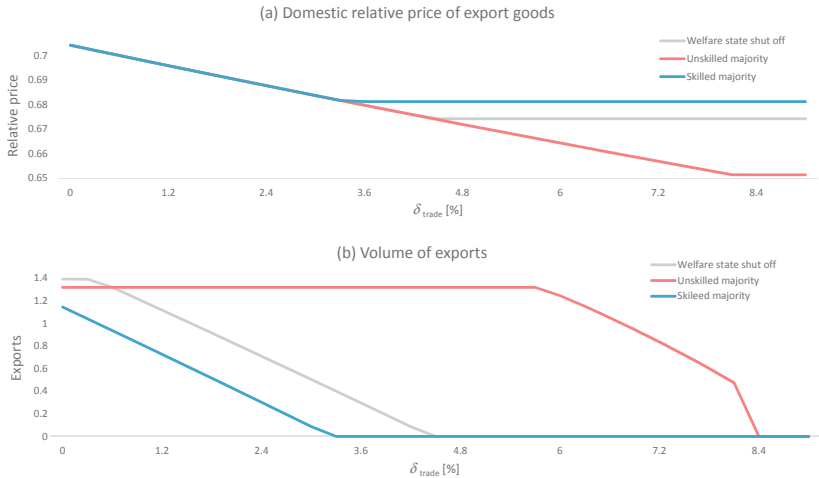


Fig. 6 a, b (The labor-abundant case): exports and prices. **a** The domestic relative price. **b** The volume of exports (*Source* Simulations based on the model in Appendix. *Note* For parameter values see Appendix)

and the last departure from autarky occurs when the skilled-rich form the majority. A mirror image is what happens to the volume of exports after the departure from autarky: it is the largest when the unskilled-poor form the majority; intermediate under the no- welfare-state regime, and smallest when the skilled-rich form the majority.

As in the capital-abundance case, also in the labor abundance case, when the skilled-rich form the majority, they levy taxes on labor only. Analogously, when the unskilled-poor form the majority, they levy taxes on capital only.

In contrast to the capital-abundance case, it is now the unskilled-poor who are the most pro-globalization; the skilled-rich are the least pro-globalization; and in the absence of a welfare state system, the economy’s posture toward globalization is in between.¹⁶

An interesting contrast arises when looking at the well-being of the two classes; compare Figs. 5 and 7. First, the gainers from intensified

¹⁶ Mayer (1984) analyzes endogenous commercial policies that the median voter chooses based on the capital and wage he/she is endowed with.

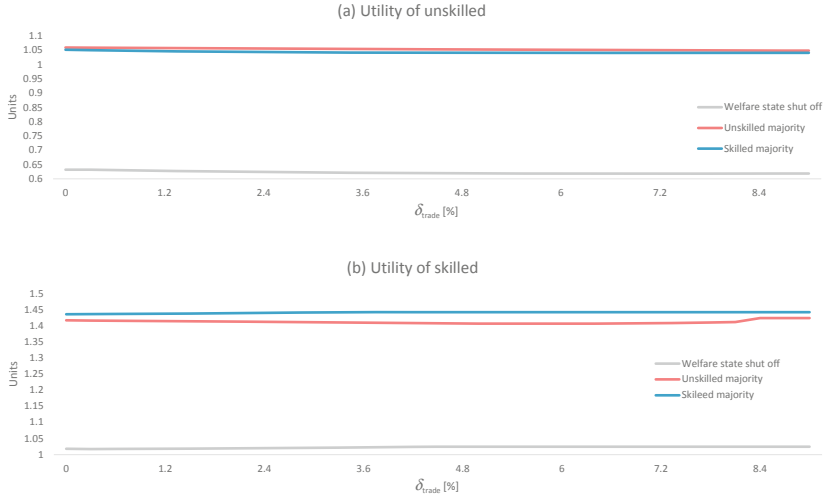


Fig. 7 (The labor-abundant case): utilities. **a** Unskilled utility. **b** Skilled utility (*Source* Simulations based on the model in Appendix. *Note* For parameter values: see Appendix)

globalization in the absence of the welfare state (where only market forces without redistribution of income drive the equilibrium) are now the unskilled-poor, whereas the losers are the skilled-rich. For it is now the labor-intensive good which is exported, and consequently the wage rises and the return to capital falls with increased globalization. In both the capital-intensive export and the labor-intensive export cases, the welfare state, which provides the social benefit B , improves the well-being of the two classes, irrespectively of the intensity of globalization.

In the present case, when the unskilled-poor form the majority, then increased globalization ameliorates their well-being, as expected; whereas the skilled-rich are hardly affected (again, the existence of the welfare state mitigates the adverse effects of globalization on them). When the skilled-rich form the majority, they not only no longer lose from intensified globalization (as in the absence of the welfare state)—they actually gain by increasing the burden on the unskilled-poor.

Concerning trade-globalization and the provision of social benefits, the main predictions of the model depend on relative factor abundance:

- (a) If the economy is capital abundant, and its exports are capital-intensive, market forces lead to gains for the skilled-rich, and losses for unskilled-poor as trade globalization intensifies. This configuration is reversed when the economy is labor abundant. In the case of a high saving country, market forces lead to gains for the skilled-rich, and losses for unskilled-poor as trade globalization intensifies; this configuration is reversed in the case of a low-saving country.
- (b) If the economy is relatively capital-abundant compared to the rest of the world, as the degree of trade globalization weakens and outward capital flows recede, the provision of social benefit declines. In contrast, if the economy is relatively labor-abundant compared to the rest of the world, as the degree of globalization weakens and inward capital flows recede, the provision of social benefit rises.

That is, pro-globalization attitudes of voters among various income groups, depend on trade-related fundamentals, and similarly, regarding welfare-state tax-transfer policies. We summarize the model's main propositions, as follows:

Proposition 1 *The skilled-rich who are the most pro-globalization; the low-skilled-poor are the least pro-globalization; and the no welfare state (unfettered market forces) degree of globalization lies in between.*

Proposition 1' *The skilled-rich who are the least pro-globalization; the low-skilled-poor are the most pro-globalization; and the no welfare state (unfettered market forces case) degree of globalization lies in between.*

Proposition 2 *In the POOR policy regime (the capital abundant case), as the degree of globalization intensifies, social benefits rises!*

Proposition 2' *In contrast to the capital-abundance case, in the labor-abundant case, as the degree of globalization intensifies, the provision of social benefit falls when the in the POOR policy regime.*

7 FINANCIAL GLOBALIZATION

We turn now to the case of financial globalization. As before, we capture the ease of globalization by the level of the friction cost δ_k . A lower level of δ_k means a higher degree of financial globalization. Note that in the case of capital exports (corresponding to a positive sum of net foreign assets position), a decline in δ_k raises the return to investing abroad, and thereby stimulates it (see Eq. 1). In the case of capital imports (corresponding to a negative sum of net foreign assets position), a decline in δ_k raises the return to foreigners on their investment in our small open economy, and thereby accelerates it (see Eq. 2). We divide the discussion into two different capital-account regimes: a high saving economy, which lends to the rest of the world, and a low-saving economy, which borrows from the rest of the world.

7.1 *High-Saving Economy*

Figure 8a suggests, as expected, that a decline in δ_k increases unambiguously the export of capital. The mirror image of this graph is illustrated in Fig. 8b where we can see that the higher volume of capital exports decreases the stock of domestic capital. This result holds no matter whether the skilled-rich or unskilled-poor form the majority; or whether the welfare state is present.

Interestingly, both the skilled-rich and the unskilled-poor increase the level of capital exports, relative to the case of no-welfare-state, for all levels of δ_k . As expected, with source based capital taxation in the welfare state, which exempts capital exported abroad from taxes, while levying taxes on capital invested at home, the incentive to export capital is amplified. One may wonder why, notwithstanding the fact that the welfare state encourages capital exports, the domestic stock of capital is nevertheless still larger in the presence of the welfare state, relative to the case of no-welfare-state. The reason is that the welfare state enhances wellbeing and boosts domestic saving (see Fig. 8c). Naturally, when the capital-labor ratio falls, as the result of capital exports, pre-tax return to capital rises and the pre-tax wage falls.

Figure 9 presents the effect of increased globalization on the taxes and the social benefit.

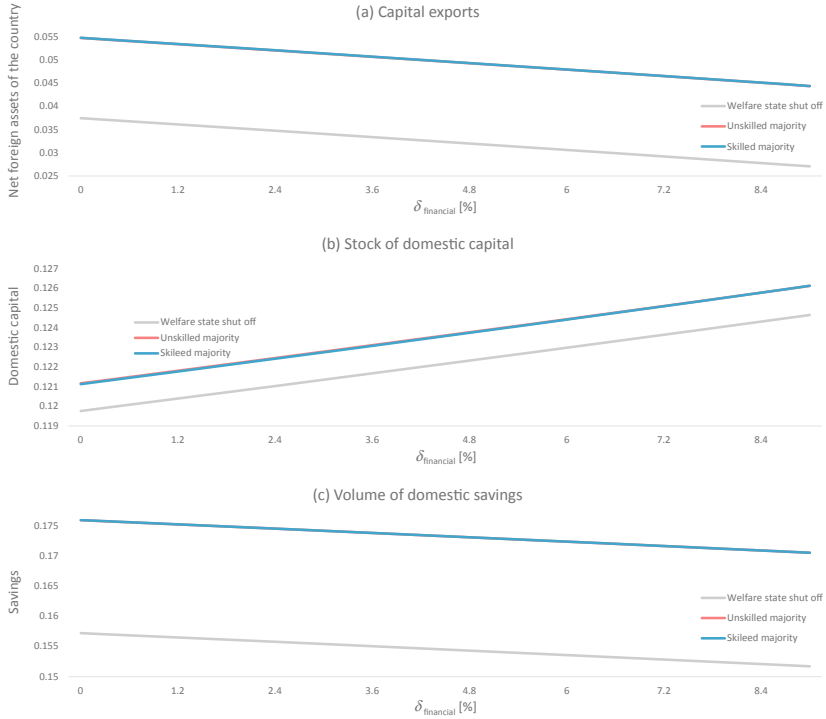


Fig. 8 Capital exports and domestic capital (*Source* Simulations based on the model in Appendix. **a** Volume of capital exports. **b** Stock of domestic capital. **c** Savings. *Note* For parameter values, see Appendix)

Both when the skilled-rich form the majority, or the unskilled-poor form the majority they levy taxes on both capital and labor. As globalization intensifies and the capital tax base shrinks, as a result of capital outflows, both types of majority raise taxes on labor and capital. The social benefit, B , being essential, consisting of some goods and services that the market does not provide (e.g., job security, health care, etc.) rise moderately as δ_k falls and wellbeing is ameliorated.

Naturally, the welfare state, which provides the social benefit B , raises utility for all, independently of who form the majority and of the degree of globalization.

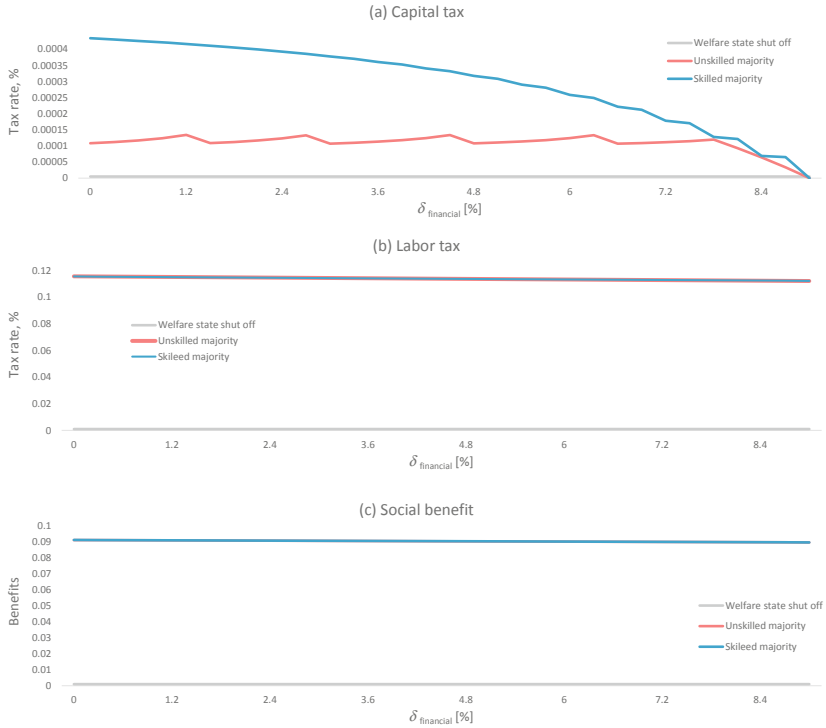


Fig. 9 (The capital-export case): taxes and social benefits. **a** Capital tax. **b** Labor tax. **c** The volume of social benefits (*Source* Simulations based on the model in Appendix. *Note* For parameter values, see Appendix)

7.2 Low-Saving Economy

Figure 10a suggests, as expected, that a decline in δ_k increases unambiguously the imports of capital, in the absence of a welfare state (where market forces work alone). The mirror image of this graph is illustrated in Fig. 10b, where we can see that the higher volume of capital imports increases, naturally, the stock of domestic capital. Note also that when the stock of domestic capital increases, then the return to capital falls and the wage rate rises. Naturally, very high values of δ_k deter capital imports altogether, and the small open economy is in a financial autarky. Note that as δ_k falls the economy moves out of the autarky state first in the case of no

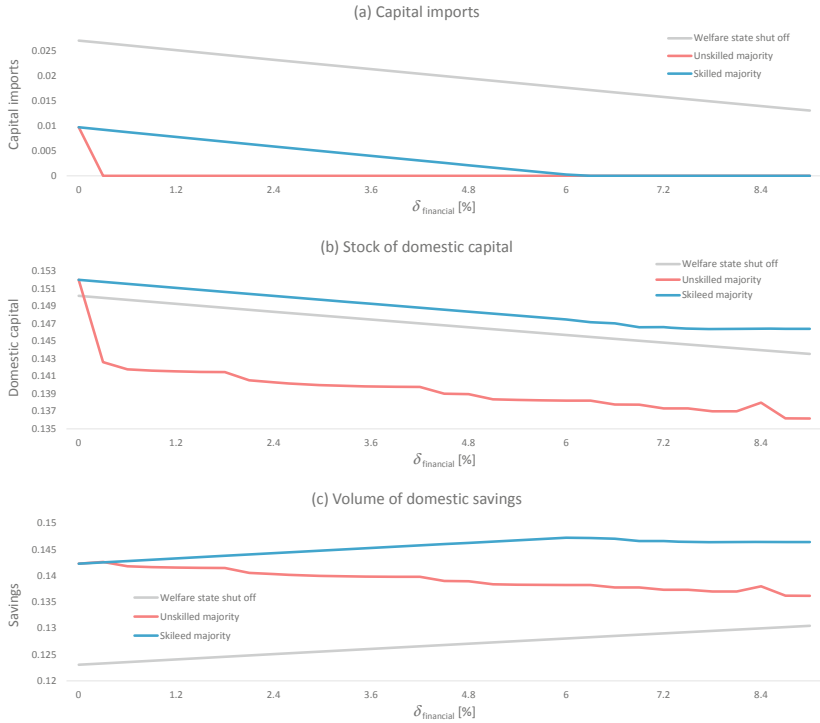


Fig. 10 Capital imports and the stock of domestic capital. **a** The volume of capital imports. **b** The stock of domestic capital. **c** The volume of savings (*Source* Simulations based on the model in Appendix. *Note* For parameter values, see Appendix)

welfare state; second, when the skilled-rich form the majority; and third, when the unskilled-poor form the majority.¹⁷

¹⁷One may wonder why there are still changes in the economy in the financial autarky state as δ_k falls, for the welfare state regime. The reason is that the pure market forces (indicated by the graph of when the welfare state is shut off) are leading to capital imports. The welfare state reacts in the presence of such market pressures by levying taxes and providing social benefits which curtail imports of capital for a range of values of δ_k , until its value is sufficiently low. At this point the welfare state gives into the “market forces”, and capital start coming in.

Interestingly, the unskilled-poor lower the level of capital imports more than the skilled-rich; they both reduce capital imports relative to the case of no-welfare-state. As expected, with source based capital taxation, which taxes capital imported from abroad, the incentives of foreigners to invest in the small open economy are dampened by the existence of the welfare state. One may wonder why the domestic stock of capital is nevertheless still larger when the skilled-rich form the majority, relative to the no welfare state case, even though they discourage capital imports (see Fig. 10b). The reason is that the welfare state, in this case, boosts domestic saving sufficiently (see Fig. 10c) to compensate for the squeezed capital inflow.

Figure 11 presents the rates of taxes and the volume of social benefits when the small open economy imports capital from the rest of the world. When the skilled-rich form the majority, they choose to impose no taxes on capital. They lower moderately the tax rate on labor as δ_k falls. Interestingly, when the unskilled-poor form the majority, they increase the tax on labor (though still this tax is at a lower rate than when the skilled-rich form the majority), and lower sharply the tax on capital once they depart from financial autarky and start to import capital. When the skilled-rich form the majority the social benefit follows a similar pattern as the labor tax rate does (recall that they levy no tax on capital): as δ_k falls, they lower moderately the volume of the social benefits.

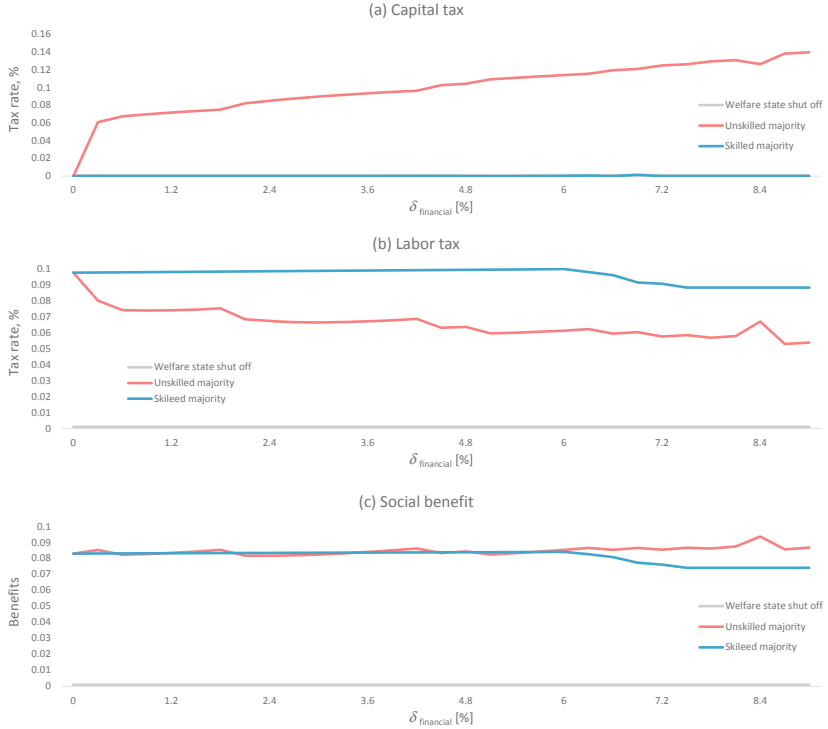


Fig. 11 (The capital import case): taxes and social benefits. **a** Capital tax. **b** Labor tax. **c** The volume of social benefits (*Source* Simulations based on the model in Appendix. *Note* For parameter values, see Appendix)

8 CONCLUSION

The chapter highlights key trade-related and finance-related mechanisms, linking forces of globalization to the welfare-state fiscal structure. The welfare state, which provides social benefit that are financed by levying labor and capital taxes, is governed by the majority of the voter population; thus reflecting their economic interests. At the root cause of the interactions between the welfare state and globalization lies the world markets, which inflict intense pressures on the welfare state. Globalization pressures force significant fiscal changes for the economy to be able to compete in trade and capital markets internationally. Furthermore,

they radically affect incomes from capital investments and from labor services of various classes. Income-based political cleavages are grounded on trade-related and macro-related fundamentals, familiar from a standard open-economy model. They are: (i) The degree of trade border frictions, (ii) The degree of international finance frictions, (iii) The relative factor abundance that determines the capital intensity of the country's exports; and, (iv) The domestic savings and productivity of domestic investment, which determines whether the country is a financial capital exporter or importer.

Let us refer to the policy regime when the high-skill-rich are the majority as the RICH policy regime. Similarly, let us refer to the policy regime when the low-skill-poor are the majority as the POOR policy regime.

The main general predictions of the model are:

Conclusion 1 (capital-endowment rich economy): The skilled-rich who are the most pro-globalization; the low-skilled-poor are the least pro-globalization; and the no welfare state (unfettered market forces) degree of globalization lies in between.

Conclusion 2 (capital-endowment rich economy): As the degree of globalization intensifies, provision of social benefits increases, under the POOR policy regime.

Conclusion 1' (labor-endowment rich economy): The unskilled-poor are the most pro-globalization; the high-skilled rich are the least pro-globalization; and if the welfare state is shut off (and only unfettered market forces are at play) the equilibrium degree of globalization lies in between.

Conclusion 2' (labor-endowment rich economy): As the degree of globalization intensifies, provision of social benefits diminishes, under the POOR policy regime.

Conclusion 3: Financial globalization leads to greater provision of social benefits in the high-saving, capital outflow case, under the POOR policy regime.

In the following table we describe how the volume of capital flows depends on the policy regime and the propensity to save.

<i>Policy regime</i>	<i>High saving</i>	<i>Low saving</i>
Rich	High	Low
Poor	High	Medium
Welfare-state shut-off	Low	High

That is, as standard, that if the economy export good is capital intensive, market forces lead to gains for the skilled-rich, and loses for unskilled-poor lose as trade globalization intensifies. The skilled-rich are pro-globalization, reinforcing market forces when they form the majority. We find that As the degree of globalization intensifies, and the low skilled form the majority, the provision of social benefits rises.

In contrast, when the economy export good is labor intensive and when the low-skilled form the majority the provision of social benefit falls as the degree of globalization intensifies.

Analogously, If the economy is a good saver, investing also in the rest of the world, and the unskilled-poor form the majority, as the degree of financial globalization weakens the provision of social benefit rises.

If the unskilled-poor form the majority, and the economy is a poor saver, in which case the rest of the world foreign investment in the domestic investment, as the degree of financial globalization weakens the provision of social benefit falls.

We demonstrate that the welfare state spreads out the gains from globalization from low skilled-poor to high skilled-rich, not only when the latter are the majority which determines redistribution policies, but also when the former form the majority.

Furceri et al. (2019), using industry-level data, form the empirical significance of this distinction. They demonstrate that industry-level output gains associated with capital account liberalization are small and not statistically different between sectors with low external financial dependence—a key channel through which financial globalization may enhance firms' investment (Rajan and Zingales 1998). In contrast, the declines in industry labor shares following liberalization are economically and statistically significant and long lasting. They also find that the decline in labor shares is higher the more substitutable are labor and capital in the production process, and the greater are firms' natural layoff rates—a proxy for the (lack of) bargaining power of labor—in response to idiosyncratic shocks.

However, the role of economic class in the provision of social benefits in the presence of globalization have not yet been the subject of empirical research.

APPENDIX: GLOBALIZATION MODEL AND PARAMETER VALUES

A representative firm produces good g according to a constant-returns-to scale technology:

$$g = A_g F_g(K_g, L_g) = A_g K_g^{\alpha_g} L_g^{1-\alpha_g}, \quad g = x, y, \quad (4)$$

where, K_g is the input of physical capital, and L_g is labor, measured in efficiency units, used in the respective production process. $A_g > 0$ is a total factor productivity coefficient, and α_g and $1 - \alpha_g$ are, respectively, the capital and labor shares in the sector producing g .

Capital is employed together with labor in the first period with output generated in the second period. We assume that labor is paid in the second period, at the end of the production process.

Capital (K) is a composite good, produced in the first period as of a variable mix of x_k and y_k , according to:

$$K = x_k^\beta y_k^{1-\beta}, \quad \text{where } 0 < \beta < 1. \quad (5)$$

To find the cost minimizing mix of x and y , of which a unit of capital (K) is composed of, one, has to solve the following problem:

$$\min_{(x,y)} (x_k + p_1 y_k)$$

subject to :

$$x_k^\beta y_k^{1-\beta} \geq 1$$

where p_t is the domestic price of y in period $t = 1, 2$.

Solving this problem yields also the unit price p_k of capital as

$$p_k = D p_1^{1-\beta}, \quad (6)$$

where $D = (\frac{1-\beta}{\beta})^\beta + (\frac{\beta}{1-\beta})^{1-\beta}$.

The labor supply in efficiency units (L^S) is given by

$$L^S = \lambda - m_s + (1 - \lambda)\rho. \quad (7)$$

Demands for labor and capital are given, respectively, by the marginal productivity conditions in both sectors. Note that because labor and capital move freely between the two sectors, then the factors of production earn the same remuneration across sectors, that is:

$$w = (1 - \alpha_x)A_x k_x^{\alpha_x}, \quad (8)$$

$$w = p_2(1 - \alpha_y)A_y k_y^{\alpha_y} \quad (9)$$

$$p_k(1 + r) = \alpha_x A_x k_x^{1-\alpha_x}, \quad (10)$$

$$p_k(1 + r) = p_2 \alpha_y A_y k_y^{1-\alpha_y}, \quad (11)$$

where k_g is the capital-labor ratio in sector g , that is $k_g = \frac{K_g}{L_g}$; w is the wage rate per efficiency unit, paid in the second period after the completion of the production process. Note that for simplicity we assume that capital fully depreciates at the end of the production process.

We denote by c_{gi1} the consumption of good $g = x, y$ by an individual of type $i = u, s$ in period $t = 1, 2$. All individuals have identical preferences, given by

$$u_i = (c_{xi1}^a c_{yi1}^{1-a})^b (c_{xi2}^a c_{yi2}^{1-a})^{1-b} + dB^\gamma, \quad (12)$$

where $0 < a < 1$, $0 < b < 1$, $d > 0$, $\gamma > 0$, and B is a uniform social benefit (provided in an equal amount to all individuals), assumed (for simplicity) to be provided in the second period only. This social benefit captures the various ingredients that a welfare state provides, such as health services, education, in-kind transfers, etc. Note that the social benefit is not a perfect substitute to private consumption.¹⁸

Individual budget constraints for period 1 and 2 are given, respectively, by:

$$S_i = \bar{x}_i + p_1 \bar{y}_i - c_{xi1} - p_1 c_{yi1}. \quad (13)$$

¹⁸In our model, the redistribution made by the welfare state is in the form of an in-kind benefit.

$$S_i[1 + (1 - t_k)r] + \rho_i(1 - \eta)w = c_{xi2} + p_2c_{yi2}, \quad (14)$$

where, S_i is domestic saving of individual $i = u, s$. Observe that when $(1 - \lambda)S_u + (\lambda - m_s)S_s - p_k(K_x + K_y)$ is positive, then capital is exported and Eq. (1) is relevant; whereas when $(1 - \lambda)S_u + (\lambda - m_s)S_s - p_k(K_x + K_y)$ is negative, then capital is imported and Eq. (2) is relevant.

We abstract from a tax on the initial endowments because these are in fixed supply at the beginning of the first period, and a tax on them is not distortive; it will tend to be extremely high. Furthermore, when the low-skill form the majority, they will tax them at a rate of 100%. For a similar reason, we abstract also from a tax on consumption (VAT) because it is equivalent to a tax on wages (which are taxed directly in our model), and a tax on the initial endowments (see, for instance, Frenkel et al. 1991).

Consumption demands are then given by:

$$c_{xi1} = abI_i. \quad (15)$$

$$c_{yi1} = \frac{(1 - a)bI_i}{p_1}, \quad (16)$$

$$c_{xi2} = a(1 - b)I_i[1 + (1 - t_K)r] \quad (17)$$

and

$$c_{yi2} = \frac{(1 - a)(1 - b)I_i(1 + (1 - t_K)r)}{p_2}, \quad (18)$$

where I_i is a lifetime income (in present value) of an individual of type $i = u, s$, given by

$$I_i = \frac{\rho_i w(1 - t_L + (\bar{x}_i + p_i \bar{y}_i)[1 + (1 - t_K)r]}{1 + (1 - t_K)r}, \quad (19)$$

where

$$\rho_i = \begin{cases} \rho & \text{for } i = u \\ 1 & \text{for } i = s \end{cases} \quad (20)$$

Finally, consider the government, which is active in a balanced-budget way only in the second period. Its budget constraint is:

$$(1 - m_s)B = t_1 wL + t_k r p_k (K_x + K_y). \quad (21)$$

Note that the government taxes capital income of both domestic residents and foreigners which originates in the domestic economy, $rp_k(K_x + K_y)$.¹⁹ This means that when saving of domestic residents exceeds domestic investment, $p_k(K_x + K_y)$, with the excess invested abroad, then this excess is not taxed at home. Conversely, when savings of domestic residents fall short of domestic investment, $p_k(K_x + K_y)$, with the shortage financed by foreigners, then this shortage is taxed by the domestic government.

Clearance in the goods market in period 1, and period 2, respectively, yields:

$$\begin{aligned} & (1 - \lambda)(c_{xu1} + p_1c_{yu1}) + (\lambda - m_s)(c_{xs1} + p_1c_{ys1}) + p_k(K_x + K_y) \\ & = (1 - \lambda)(\bar{x}_u + p_1\bar{y}_u) + (\lambda - m_s)(\bar{x}_s + p_1\bar{y}_s) + p_k(K_x + K_y) \\ & - [(1 - \lambda)S_u + (\lambda - m_s)S_s] \end{aligned} \quad (22)$$

and

$$\begin{aligned} & (1 - \lambda)(c_{xu2} + p_2c_{yu2}) + (\lambda - m_s)(c_{xs2} + p_2c_{ys2}) + (1 - m_s)B \\ & = F_x(K_x, L_x) + p_2F_y(K_y, L_y) \\ & + [(1 - \lambda)S_u + (\lambda - m_s)S_s - p_k(K_x + K_y)]I_{CF} \end{aligned} \quad (23)$$

where

$$I_{CF} = C \begin{cases} 1 + R^* - \delta_k & \text{if } (1 - \lambda)S_u + (\lambda - m_s)S_s \geq p_k(K_x + K_y) \\ 1 + (1 - t_k)r & \text{if } (1 - \lambda)S_u + (\lambda - m_s)S_s \leq p_k(K_x + K_y) \end{cases} \quad (24)$$

Note that when the country exports capital (that is, $(1 - \lambda)S_u + (\lambda - m_s)S_s > p_k(K_x + K_y)$), then it incurs the cost of δ_k on its capital

¹⁹We adopt the source principle of international taxation because the residence principle, where residents are taxed on their worldwide income, is not easily enforced. Most countries resort to source-based taxation of income from capital. In this situation, tax competition among countries, may lead to inefficiently low tax rates and welfare-state benefits because of three mutually reinforcing factors. First, in order to attract mobile factors or prevent their flight, tax rates on them are reduced.

Second, the flight of mobile factors from relatively high tax to relatively low tax countries shrinks the tax base in the relatively high tax country. Third, the flight of the mobile factors from relatively high tax to relatively low tax is presumed to reduce the remuneration of the immobile factors, and, consequently, their contribution to the tax revenue.

exports. Conversely, when foreigners invest in the domestic economy (that is, $(1 - \lambda)S_u + (\lambda - m_s)S_s < p_k(K_x + K_y)$), then the country pays foreigners only $1 + (1 - t_k)r$, because they are taxed on their income originating in the domestic economy; foreigners bears the friction cost δ_k in this case. Note, however, that it follows from Eqs. (13)–(14) that Eq. (22) is redundant, as it merely states that exports/imports of goods and capital are allowed.

Clearance in the labor market yields:

$$L^S = L_x + L_y. \quad (25)$$

We allow skilled individuals to emigrate abroad, depending on the source-destination utility differences:

$$m_s = Z(u_s^* - u_s)^z \quad \text{with } Z > 0, \quad 0 < z < 1. \quad (26)$$

Where, u_s^* is the (exogenously given) utility level attained by s -individuals who reside abroad. Note that the number of emigrants depends positively on the foreign-domestic utility differential, $u_s^* - u_s$.

As for the welfare state features in the model, we assume that the tax-transfer policy (that is, the choice of t_L , t_k and B) are determined by majority voting. Because the individuals in each of the two skill groups are identical, the larger group determines policies, according to its own preferences. Thus, when λ is less than 0.5 (and so is $\lambda - m_s$), the u -individuals form the majority, and the tax-transfer policy is determined so as to maximize the u -individual utility level (that is, u_u). This regime is henceforth referred to as the u -regime. Similarly, when $\lambda - m_s$ (which is not an exogenous variable) is larger than 0.5, the tax-transfer policy is determined by the s -individuals, to maximize their utility level, u_s . This regime is henceforth referred to as the s -regime.

The forces of trade and financial globalization are intertwined in their implications for income distribution and tax-transfer policies. To get a better insight into these interdependent effects we consider separately trade globalization and financial globalization.

CROSS REGIME COMMON PARAMETER VALUES

α_1	0.25
$P\alpha_2$	0.45
β	0.6
Γ	0.5
γ	0.05
A_1	5
A_2	5
T	2
λ	0.5
t_k^*	0.4
Z	0.05
ζ	2
U^*	1.5
a_c	0.5
a_k	0.5
\underline{x}_u	0.5
ρ	1
\underline{x}_s	0.5

REGIME-SPECIFIC PARAMETER VALUES

<i>Parameter</i>	<i>Value</i>	<i>Figures</i>	
<i>Trade</i>			
p^*	1.56	K-specialization	
\hat{p}^*	0.70422535	L-specialization	= 1/1.42
δ_{trade}	0–9%		
<i>Financial liberalization</i>			
R^*	3.5	K-export	
R^*	3.02	K-import	
$\delta_{\text{financial}}$	0–9%		



Migration and the Welfare State at Work: Israel's Experience

1 INTRODUCTION

Globalization and free migration, when they can be made to work, are a tremendous source of resilience, innovation, creativity and renewal. Israel provides the evidence.

Globalization is currently facing some challenging political tests, to a greater extent than in past decades.¹ Migration is at the core of the emerging economic nationalism, which threatens to roll back international integration developments. Jeff Sachs (2017) puts it succinctly when he says:

If people were told that they could move, no questions asked, probably a billion would shift around the planet within five years, with many coming to Europe and the US. No society would tolerate even a fraction of that flow. Any politician who says, 'Let's be generous,' without saying 'We're not going to let the doors stand wide open' will lose.

¹Anti-globalization sentiments have been rising especially in Europe and the United States, with the increasingly integrated global economy blamed for domestic economic distress. In Razin (2018) I argue that Israel offers a counterexample to this view, showing decisively positive economic effects of globalized finance, trade, and immigration. The book offers a rigorous analysis of the role played by globalization in key episodes in the remarkable development of the Israeli economy. The book's findings may hold lessons for productivity-challenged advanced economies as well as for other countries such as China and India currently making the transition to fully developed economies.

The core of the wall-building coalition in the United States consists of white males with low educational attainment. Low-income citizens were also far more likely to support Brexit in the United Kingdom. Evidently, rational and generous policy that also resonates politically will not eliminate national borders altogether. Rather, immigration policy may elicit socioeconomic arguments for limiting the flow of immigrants. The argument for a “points-based” immigration system is an explicit call to increase the skill composition of UK immigrants. However, because Israel’s Law of Return imposes no barriers, Israel not only enables free immigration but also grants Jewish immigrants immediate citizenship, regardless of origin and skill.² For an economist, it is like a laboratory experiment of how free migration can function without severe social frictions and anti-migration sentiments that drive barriers for immigration.

Throughout history, demographic trends have often shifted the balance of politics among ethnic groups, economic classes and age groups. In Israel, the assimilation of immigrants in the electoral system has been relatively robust, and the change in the political balance was therefore substantial. Immigrants’ voting patterns are a key factor in the political-economy mechanism that determines income distribution and redistribution (see Razin et al. 2002a, b).

A related issue in the context of migration is the implications of an ageing native born population for the size of the welfare state (see Razin et al. 2011). In other words, immigrants influence the size of the welfare state directly through the electoral system, and indirectly, through their effect on market-based inequality.

The organization of the chapter is as follows: Sect. 2, provides a background to Israel’s unique immigration story; Sect. 3 discusses migrants’ high-skill characteristics; Sect. 4 addresses the unique assimilation story of the immigrants from the FSU; Sect. 5 develops a political-economic theory to shed light on the inequality consequences of the immigration from the FSU; and Sect. 6 concludes.

²The Law of Return applies only to Jews or those descended from at least one Jewish grandparent. All other immigrants are subject to temporary status of a few years before being allowed to apply for citizenship.

2 HISTORICAL BACKGROUND

Immigration has far-reaching economic and social consequences. These include the labor market, international trade, economic growth, the social and political structure, and more (for example, Lucas [2014] provides a recent treatise on the issue). Between 1990 and 2012, almost 20 million people moved from central, eastern and southeastern Europe to richer countries in western Europe, accounting for about 8% of the population of Europe. This east-west migration accelerated after 2004 when eight eastern European countries, including Poland, the Czech Republic and Hungary, joined the EU. At the same time, Israel received almost 1 million immigrants, about 20% of Israel's population. In both episodes immigration and border restrictions were eased. Both in the Israeli case and within the EU's borders there is free movement of people tied to the free movement of trade and capital. However, in addition to the relative size of the flow of immigrants, there are key differences between the two cases in the skill levels of the immigrants and the immigrant-absorption policies that the receiving countries embraced.

In terms of continuing the globalization effort, Israel's unique experience is vastly different not only from the recent experience in Europe, but also from the US experience. The core of the "wall-building" coalition in the US is comprised of white males with low educational attainment. In the UK, those with low incomes were far more likely to support Brexit. The call for a "points-based" immigration system from the Brexit campaign was an explicit call to increase the skill composition of UK immigrants. A simple argument to explain the recent anti-immigration sentiment is that low-skilled immigrants compete for jobs with low-skilled native-born workers, depressing their wages. Furthermore, low-skilled immigrants are more likely to be net beneficiaries from the typically generous welfare state—the burden of which low-skilled workers share. In contrast, high-skilled immigrants may increase the productivity of the low-skilled population, and are net fiscal contributors, making them a more attractive form of immigration. Net fiscal burden underpins the discontent with immigration, and tilts the preference for the composition of immigration toward high-skilled workers.

Other groups are more likely to gain from low-skilled immigration. Low-skilled immigrants increase the wages of high-skilled workers, and do not necessarily impose a fiscal burden on retirees, who no longer

fund the welfare state. Therefore, high-skilled workers support the globalization course that advanced economies have taken until the most recent wave of anti-immigration sentiment. In Israel, as we will see, the major political-economic effect of the immigration in the 1990s and early 2000s is on income inequality through the downsizing of the welfare state. However, partly because of the successful integration, no significant anti-immigration sentiments emerged.

The exodus of Soviet Jews to Israel in the 1990s, especially its impacts on income inequality and the political balance of power vivifies Lucas's findings.³ Israel is well known for the unique ways in which it absorbs immigrants, who in turn tend to arrive in waves triggered by external shocks. Each wave has its unique origin, distribution of skills, and often socioeconomic characteristics. Thus, the exodus of Soviet Jews in the 1990s adds useful insights into this ongoing experiment.

The importance of the Soviet Jewish exodus is best appreciated when one thinks in historical perspective. Immigration to pre-state Palestine and to the state of Israel came in waves from the late nineteenth century onwards.⁴ During the pre-state era (prior to 1948), immigration was at times restricted by the British rulers.⁵ However, the Law of Return, passed in 1950, opened, and even encouraged, immigration to all Jews. Table 1 suggests that at times, immigration accounted for about 20% of the established population, especially in the early years of statehood and during the last wave of immigration from the FSU.

The disintegration of the Soviet Union and the fall of communism in the USSR between 1987 and 1991 triggered the wave of Soviet Jewish emigration (Fig. 1) to various parts of the world, including Israel. The Soviet Jewish immigration of the 1990s stands out from previous waves both because of its sheer volume and because of its economic motivation. The choice, albeit limited by immigration restrictions in the advanced western countries such as Australia, Canada, and Germany, was between

³Benhabib and Jovanovich (2012) consider the world-welfare perspective. My analysis focuses on an individual state. See also Razin (2018) for the various ways that Israel benefitted from being a part of the post-World War II globalization wave, with capital, finance, and goods mobility at its core.

⁴See Razin and Sadka (1993).

⁵After World War I the League of Nations granted Great Britain a mandate over the whole of Palestine. It ended in May 1948, when Israel gained its independence.

Table 1 Immigration, 1922–2001

<i>Period</i>	<i>Immigrants as a percentage of established population</i>	<i>Annual growth rate of population, percent</i>
1922–1932	8.2	8
1932–1947	6.4	8.4
1947–1950	19.8	21.9
1950–1951	13.2	20
1951–1964	2.2	4
1964–1972	1.3	3
1972–1982	0.9	2.1
1982–1989	0.4	1.8
1989–2001	19	–

Source Ben-Porath (1985) for the years 1922–1982, and Central Bureau of Statistics (1992) and Bank of Israel (1991b) for the years 1982–2001

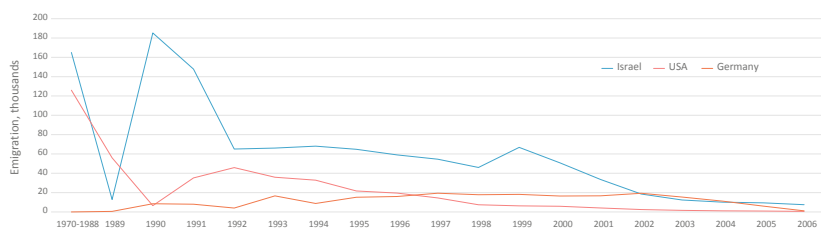


Fig. 1 Emigration of Jews and their family members from the FSU to Israel, the US and Germany (thousands) (*Source* <http://demoscope.ru/weeklv/2012/0497/demoscope497.pdf>)

Israel and the rest, and the US. In fact, for a portion of would be immigrants, Israel was a second choice.

Every receiving country, except Israel, imposes quotas on the number of immigrants. The Law of Return provides for open immigration of Jews into Israel. Non-Jewish immigration is not subject to any quotas in Israel, but is subject to a citizenship application that is preceded by temporary status of a few years.

The primary driver of Jewish exodus from Russia between 1990 and 1996 was the Soviet Union’s—and subsequently Russia’s—economic collapse, often-dubbed “Katastroika”. The Jewish community sensed the pain, anticipated the danger and fled for this compelling reason, but also

due to the twin threats of a military *coup d'état* and civil war. In macroeconomic jargon, both the demise of the Soviet Union and the following exodus are supply side shocks that triggered sizeable migration flows. The communist regime inaugurated a liberalization (“glasnost”) campaign in the political (“demokratizatsiya”), economic (“perestroika”), social and international spheres (“novoe myshlenie”) that expanded opportunities for many, including the Soviet Jews, to increase their well-being.⁶ However, they were legally barred from leaving the country until the complete demise of the regime. The prospect of a brighter future in more stable and advanced countries was reinforced by mounting political, social and economic turmoil that raised the risk of civil war, created the specter of a military *coup d'état*, and threatened economic collapse.

The Soviet economy ceased growing in 1989, and then plummeted by nearly 10% in 1990 as enterprise managers focused on privatizing state assets to themselves (“spontaneous privatization”), liquidating them and transferring balances abroad instead of dedicating them to current operations. Inter-industrial supply chains, the backbone of modern economies, were shattered because managers ignored their contractual obligations to intermediate input users.

This was shock therapy in action without Sachs’s conditionality.⁷ In theory, Soviet managers who had no experience designing and marketing products to satisfy consumer demand were expected to transform themselves into efficient competitors under duress. However, they could not do it. The reality was an economic depression that caused GDP to fall between 37 and 50% between 1989 and 1998.⁸ Full economic recovery was not achieved until 2006.

The Soviet Union’s crumbling sphere of influence in central Europe and East Germany, together with the successful secession of the Baltic states alerted the Soviet Jewish community to the wisdom of *carpe diem*.

⁶The first hint came in the enterprise reform law of January 1988, which allowed state enterprise managers to use company funds at their discretion instead of complying strictly with central plans (“tekhpromfinplans”). Soon thereafter, central plans ceased being obligatory. The stated intention of the enterprise reform law was to give managers more latitude in dealing with day-to-day operations, but the opportunity to divert funds from operations and investment to personal consumption and round-a-about insider privatization (“kleptostroika”) was not missed.

⁷Sachs (2012).

⁸Rosefelde and Hedlund (2008).

A window of opportunity had opened, and Jewish emigres of the 1990s chose to seize the day.

2.1 *Migration Waves and Growth: A Bird's Eye View*

One of the most distinctive features associated with the waves of *Aliyah* (Jewish immigration to Israel) is the high rates of economic growth (Table 2).⁹

Table 2 indicates that the *Aliyah* produced massive investments, both in residential structures and in nonresidential capital. These investments were so substantial that they increased the capital-to-labor ratio and facilitated economic growth, in some cases further aided by the remarkable human capital brought by the *olim* (new Jewish immigrants). Except for the *olim* who came during the major wave of *Aliyah* immediately after the birth of the state of Israel, the education level of the *olim* generally

Table 2 *Aliyah* and growth, 1922–2015 (average annual growth rates, percent)

<i>Period</i>	<i>Olim as a percentage of established population</i>	<i>Population growth rate</i>	<i>Growth rate of capital stock (excluding housing)</i>	<i>Growth rate of housing stock</i>	<i>Growth rate of per capita output (not cyclically adjusted)</i>
1922–1931	9.5	8	–	–	7.8
1932–1946	15.6	8.4	–	–	3
1947–1949	37.7	21.9	–	–	–
1950–1951	26.1	20	–	–	10
1952–1963	19.4	4	12.8	11.6	4.9
1964–1971	8.3	3	8.7	7.7	5.5
1972–1982	7.6	2.1	6.1	7.7	0.8
1983–1989	2.7	1.8	3.1	4	3.1
1990–2001	16.5	3	7	4.7	2.5
2002–2007	1.9	1.8	2.4	2.5	1.9
2008–2015	1.8	2	3.4	3.2	1.3

Source Ben Porath (1985) for the years 1922–1982; Central Bureau of Statistics (2016) and Bank of Israel (2016)

⁹Although the table alludes to simple correlation between immigration and growth, the immigration-wave shocks are considered to be an exogenous variable; a migration-push factor triggered by forces in the country of origin. See Neuman (1999).

exceeded that of the established population and thus contributed remarkably to overall productivity. It is also noteworthy that, in general, the massive investments in physical capital and infrastructure were financed by capital imports (reflected in a persistent current account deficit), as the *olim* themselves fled their former homes almost penniless and credit constrained so that they hardly saved.

For instance, Table 2 shows that during the years 1922–1931, when the average number of *olim* each year was about 9.5% of the established population, output increased at the whopping rate of about 16.4% per annum, so that per capita output increased by a remarkable 7.8% per annum. Similarly, during the years 1950–1951, when the percentage of *olim* each year averaged about 26.1% of the established population, per capita output increased by about 10% per annum. During the years 1952–1963, when the percentage of *olim* each year averaged about 19.4%, per capita output growth was steady at 4.9% *per annum*. In this period, the growth rate of capital stock was 12.8%, while housing stock grew by 11.6%—a whopping investment boom. In contrast, during the years 1972–1982, when the percentage of *olim* each year amounted to about 7.6%, per capita output increased by the meager rate of 0.8% *per annum* (obviously, the oil price shock following the Yom Kippur War depressed output growth). In 1990s, output growth was a declining trend. While the percentage of *olim* each year averaged 16.5%, per capita output growth was meager 2.5% *per annum*.

Obviously, Table 2 is only suggestive of the role played by immigration, and the massive investment that accompanied its big waves, in growing the economy. Evidently, the statistics in Table 2 reflect the effects of business cycle fluctuations, external shocks, military conflicts, and the like, in addition to the migration waves.

3 MIGRANT CHARACTERISTICS

The professional, social, attitudinal and behavioral characteristics of the 1990s Jewish exodus cohort proved to be distinctive. Immigrants came mostly from urban areas with advanced education systems. Their skill (education) composition was heavily skewed towards high education levels, with skewness in their relatively high labor income (see Table 3). Their proportion of the population was sizable, at 14.5%. Their average family size (2.32 standard persons) was lower than the national average

Table 3 The skill, age and income of immigrants from the FSU and the national average, 1990–2011

	<i>Immigrants from the FSU</i>	<i>National average^a</i>
Proportion of total population (%)	14.5	100
Household size (numbers of standard persons)	2.32	2.74
Years of schooling of head of household	14	13.3
Heads of household with a bachelor's degree (%)	41.1	29.5
Gross monthly labor income per standard person (NIS, 2011 prices)	4351	4139

^aIncluding immigrants

Source Eilam (2014)

(2.64 standard persons). This indicates fewer dependents. Most important was their higher education level and consequently their higher labor income. The average number of schooling years of the new immigrants was 14.0, compared to the national average of only 13.3.

Even more striking was the percentage of heads of households with bachelor's degrees: 41.1% among the new immigrants, compared to a national average of just 29.5%. The higher education level and the lower family size can presumably explain the income gap: The average labor income per standard person of the new immigrants was NIS 4351, compared to a national average of only NIS 4139. It is worth noting that this gap existed even though the new immigrants had less work seniority than the established population.

The educational achievement figures of the immigrants from the FSU are impressive compared to the EU-15. Relying on data from the International Organization for Migration (IOM) and the OECD, Razin and Sadka (2014) report that only 18% of the stock of immigrants in the EU-15 in 1990, and 24% in 2000, had tertiary education.

4 ASSIMILATION STORY: CATCHING UP

Cohen and Hsieh (2001) show that the average effective wages of native Israelis fell and the return on capital increased during the height of the influx in 1990 and 1991. By 1997, however, both average wages and the return on capital had returned to pre-immigration levels due to an investment boom induced by the initial increase in the return on capital. As predicted by the standard intertemporal model of the current account,¹⁰ the investment boom was largely financed by external borrowing. Furthermore, despite the high educational levels of the Russian immigrants, the Russian influx did not lower the skill-premium of native Israelis. They explain this effect by the rise in total factor productivity during the 1990s relative to the stunningly low productivity increase through much of the 1970s and 1980s. Eckstein and Weiss (2003) develop a descriptive methodology for the analysis of immigrant wage growth that is based on human capital theory. The sources of the wage growth are (1) the increase in the return on imported human capital, (2) the impact of accumulated experience in the receiving country, and (3) the mobility up the occupational ladder in the receiving country. Using data on established Israelis and immigrants to Israel from the FSU, they estimate Mincer-type wage equations jointly for the two groups. They find that in the ten years following arrival, wages of highly skilled immigrants grow at 8% a year. This is accounted for by rising return on skills (3.4%), occupational transitions (1.1%), accumulated experience in Israel (1.5%), and an economy-wide rise in wages (1.5%). They do not reject the hypothesis that the return on experience converges to that of natives and that immigrants receive a higher return for their unmeasured skills. We find that there is some downgrading in the occupational distribution of immigrants relative to that of the established labor force.

The second generation of Jews, whose parents immigrated from the FSU, experienced significantly greater upward mobility than all other ethnic groups. As documented by Aloni (2017), although the general association with parents' incomes within the FSU group is not very different than that of the general population, their mobility relative to the national distribution is high, and the second generation finds its way even to the top percentiles. Table 4 shows the estimated probability of the second generation outranking the first generation in the full sample,

¹⁰See Razin (1995).

Table 4 Intergenerational mobility indicators by Israeli ethnic groups

	<i>Israeli</i>	<i>Asia/N. Africa</i>	<i>Euro./America</i>	<i>FSU</i>	<i>Ethiopia</i>	<i>Arab</i>
Probability of outranking parents	40%	49%	37%	58%	75%	59%
Rank shift pace, controlling for initial family position	-0.22 (0.17)	-0.02 (0.15)	-	2.69*** (0.16)	-4.58*** (0.49)	-6.92*** (0.16)

Notes The first row is the child's probability of reaching a higher percentile in income distribution in his or her generation than the parents' average percentile in their income distribution. The second row is the regression results of child-rank on the population groups' dummies, controlling for parents' income rank using 100 percentile dummies. The base group is of families with Asia/North Africa origins. The sample is of children born between 1979 and 1982 matched to parents using administrative data

Standard errors in parentheses; upper asterisks indicate—*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$

Source Aloni (2017)

and the convergence rates of the groups' relative income rank. Having a higher probability of outranking parents depends greatly on the relative income position of the group in the population's income distribution. For example, Ethiopian and Arab children exhibit a high level of upward mobility. However, controlling for their initial position, FSU immigrants to Israel experienced the highest pace of upward mobility, while other groups converged to the slower mean.

4.1 *Intergenerational Mobility*

Upward mobility is also indicated in Fig. 2. The Figure shows the distribution of children of parents from the bottom decile. Comparing the FSU immigrants and the general population, the former experienced greater upward mobility, with children reaching higher earning ranks, dispersing more evenly across the deciles.

Figure 3 shows the probability of outranking parents by 5 percentiles, as a function of parents' rank. Comparing these two groups to the general population suggests an increasing polarization.

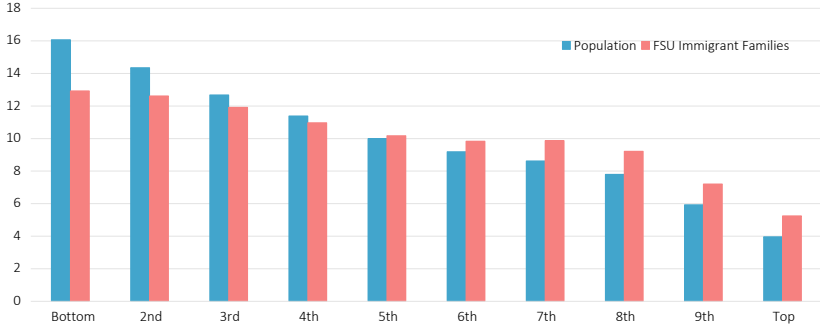


Fig. 2 Earning deciles of children born to the bottom-decile parents (*Source* Aloni 2017)

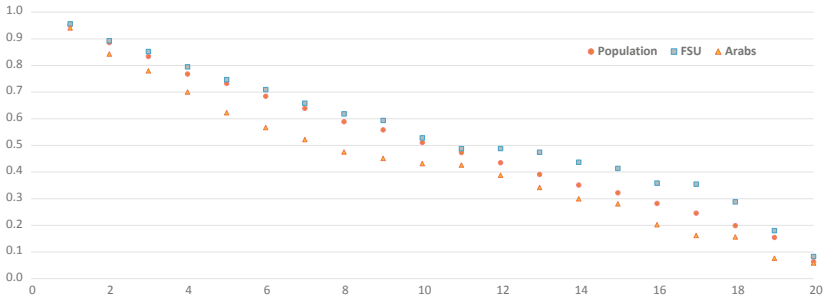


Fig. 3 Probability of outranking parents by 5 percentiles by parents' quantiles (*Note* Each point represents the proportion that have a children's rank higher than the parents' by at least 5 percentiles, binned on parents' quantile. "Population" excludes FSU and Arab population groups. The difference between FSU and Arab groups is significant at a 95% significance level throughout. *Source* Aloni 2017)

The greater upward mobility of the FSU group, along with the slower upward mobility of the Israeli-Arab group, may increase inequality. This is because the first generation FSU immigrants' income is high compared to the general population, while Israeli-Arab families have a lower mean income.

4.2 Inequality

Israel's rapid development, facilitated by its integration into the world economy and the inflow of high-skilled immigrants, came at the cost of growing income inequality, measured by both market-based and redistribution-based Gini coefficients. Currently, Israel has one of the top three levels of inequality as generated by market-forces, and it does less than other OECD countries to reduce inequality through the redistribution of income (Fig. 4).¹¹

To gauge the size of income redistribution, one can subtract the market-based Gini coefficient from the disposable income Gini coefficient. Israel is not an outlier among the OECD countries with respect to the market-driven (pre-tax-and-transfer) income inequality. Israel's relatively high market-based inequality coefficient, shown in Fig. 4, is driven

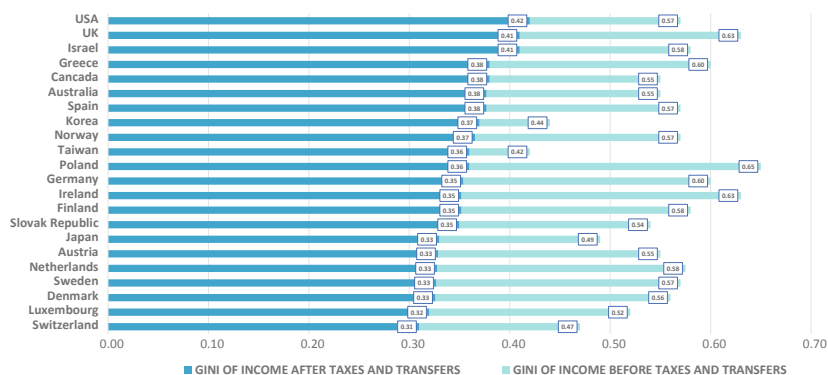


Fig. 4 Income inequality and redistribution (*Source* Gornick and Jantti 2014)

¹¹See Gornick and Jantti (2014) for a comprehensive report on income inequality and redistribution among rich countries. Krugman (2006) argues that to the extent that globalization explains rising income inequality in the United States, it is through the effect of international trade on the “skill premium”, the gap between the incomes of college-educated workers and those without a college degree. What we know, however, is that rising inequality is not mainly about the rising skill premium. Only around one-third of the rise in US inequality over the past generation is associated with a rising premium for education. Economic estimates indicate that the widening of the skill premium itself is more a result of “skill-biased technological change”, a growing demand for highly educated workers due to the rising importance of information technology, than a result of globalization.

by the large, and increasing, proportion of two relatively poor minority groups in the population: ultra-Orthodox Israeli Jews (primarily males), and Israeli Arabs (primarily females.¹²), which tend to stay out of the labor force. The rise in the proportion of these groups in the total population is because the fertility rates among these minorities are much higher than in the other groups in the population.¹³ In addition, the emergence of a large, highly educated, economically active group of Israelis, reinforced by the high-skill immigration of Soviet Jews, made the upper tail of the distribution thicker.

However, Fig. 5 indicates the time dimension of inequality. Disposable-income inequality in Israel was roughly stable until the beginning of the 1990s, and rose sharply thereafter, even though no such change occurred with respect to market-generated inequality. Israel's level of income redistribution falls short of many other OECD countries.

A partial resolution of the issue, proposed by Razin et al. (2002), hinges on the political-economy effects of a rise in the dependency ratio. A higher dependency ratio means a larger pro-tax coalition, as the low-income groups are net-beneficiaries of the transfers from those who actively participate in the labor market. However, a higher dependency ratio puts a higher tax burden on the people around the median voter, as it is necessary to finance transfers to a larger share of the population. People for whom the costs of higher taxes outweigh benefits shift to the anti-tax coalition. Hence, the second factor dominates in many

¹²Yashiv and Kasir (2011) write: "The most prominent phenomenon among Arab women is the high level of variation in the rate of participation. Its source apparently lies in the differences between 'modern' and 'traditional' women from the point of view of education, family status, number of children and proficiency in various skills (such as knowledge of English and the use of a computer). There appears to be a dichotomy or some type of dual market, in which 'traditional' women almost never participate. This can explain the low rate of participation in comparison to other countries. 'Modern' women have quite a high rate of participation, which also explains the simultaneous increase in participation and levels of education over time, together with additional cultural changes. The finding that participation rates among Arab women are very different from those observed in Western countries and among Jewish women in Israel, though not significantly different from rates in Moslem countries, reinforces the conclusion that cultural forces are at play here."

¹³Dahan (2007) explores the main factors behind the steep decline in the participation rate of Israeli men. He observes four factors responsible for the decline between 1980 and 2001: increases in the population of students (21%), the ultra-Orthodox (21%), the disabled (32%), and discouraged workers (25%).

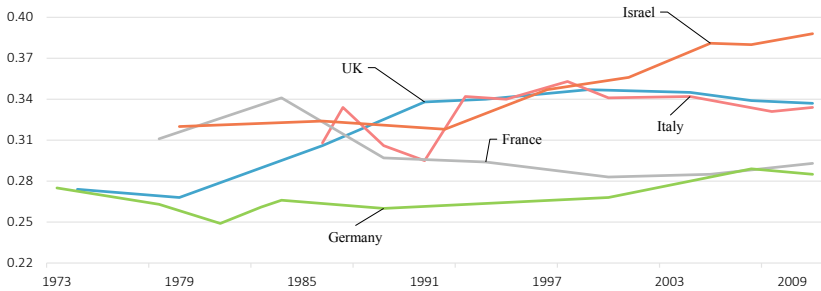


Fig. 5 Disposable income inequality (Gini Coefficient) in Israel and selected EU Countries, 1973–2013 (*Source* Ben-Oavid 2015)

of the rich countries. That is, the political-economy equilibrium-tax rate declines when the dependency ratio rises. This would be the case until society ages enough so that the median voter is retired, at which point there is a discontinuous jump up in the tax rate and a corresponding increase in the share of transfers. In other words, the increase of the fiscal net-beneficiaries as a share of the population may have two opposing effects on redistribution policies. On the one hand, the political influence gained by low-income groups is persistently on the rise. This means that the median voter preferences shift over time in the direction of a more generous welfare state.¹⁴ On the other hand, if the median voter, plausibly, does not belong to the low-skill and non-working groups (as is probably also the case in Israel), then the increased proportion of non-workers and low-skilled workers in the population may well lead policy-makers to lower taxes and transfers, because the resulting increased fiscal burden of the large share of “net beneficiaries” adversely affects the median voter (who is a net contributor to the welfare system). Consequently, the entire redistribution system contracts. The latter affect is dominant in Israel.

Figure 6 shows that the Gini redistribution coefficient began to

¹⁴Regarding the voting rights franchise in the US in the 1930s, Meltzer and Richard (1981) conclude: “In recent years, the proportion of voters receiving social security has increased, raising the number of voters favoring taxes on wage and salary income to finance redistribution. In our analysis the increase in social security recipients has an effect similar to an extension of the franchise.”

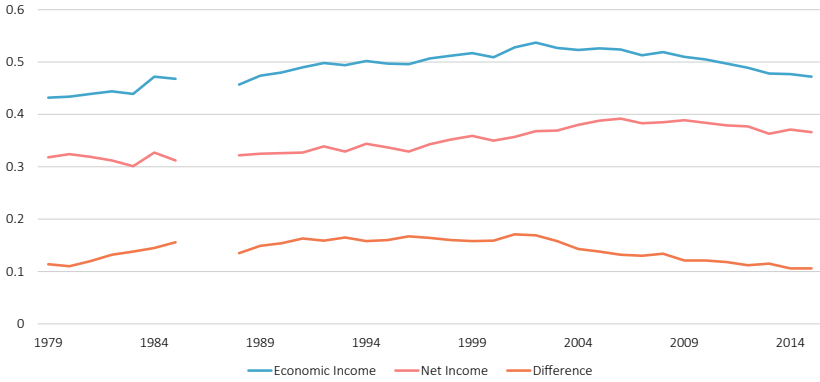


Fig. 6 Total income, net income inequality, and redistribution (The difference between the GINI coefficients for total and net income), 1979–2015 (Source Dahan 2017)

increase in 1989 and continued to rise until 2001. This long-term fall in income redistribution was concurrent with the wave of Soviet Jewish immigration. The Figure shows a strong rise in income inequality between 1990 and 2003, with declining market income inequality more than offset by a marked fall in redistribution. The influx of high-skilled immigrants can explain these two conflicting trends: a rising middle class and a rebalancing political-economy-based income redistribution policy.

Israel’s unique position among OECD countries as a welfare state (Fig. 7) highlights the country’s low ranking in terms of its per capita

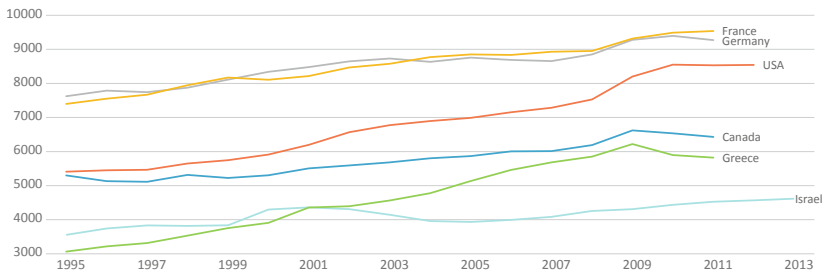


Fig. 7 Social expenditures per capita, selected countries (Note Constant 2005 PPPs, in US dollars. Source OECD library)

provision of social services.¹⁵ High defense expenditures may have crowded out social services to a greater extent than in the other OECD countries. However, even though defense expenditures as a share of GDP have followed a distinct downward trend over the last 35 years, Israel diverges down in the provision of social services relative to the other OECD countries. Figure 7 plots the per capita social expenditure for Israel against a selected group of countries. Israel is at the bottom of the group.¹⁶

5 IMMIGRANTS AND THE POLITICAL SYSTEM

Migration differs from the movement of other factor inputs (such as capital flows) in one fundamental way: Immigrants become part of the society of the receiving country, including its evolving culture and politics. (The Swiss writer Max Frisch ironically declared: “We asked for workers. We got people instead.”) A highly developed social welfare system in the receiving country may greatly complicate coalition-building political-economy matters, as emphasized by Razin et al. (2002b, 2011). While high-skilled, and therefore high-wage, immigrants may be net contributors to the fiscal system, low-skilled immigrants are likely to be net recipients, thereby imposing an indirect tax on the taxpayers of the receiving country. Immigrants may also change the nature of social interactions, with shifts in religion, ethnicity, and cultural practices.

In addition, immigrants may shift the balance of politics among ethnic groups, economic classes, or age groups, which may reshape the distribution of wealth and disposable income, and may generate a massive political backlash. In Israel, the political backlash has been moderate, whereas the change in political balance was substantial. Israel’s Law of Return grants immigrants of Jewish descent immediate citizenship and, consequently, voting rights. An early study by Avner (1975) finds that the voter turnout

¹⁵ Social expenditures temporarily increased during the immigration wave, thanks to a one-off absorption-type expenditure on new immigrants. They declined at the beginning of the 2000s.

¹⁶ A significant change in redistribution over time is potentially related to a reduction in income taxes. Income Tax fell from 30% of revenues in 2000 to 20.4% in 2015. At the same time, VAT increased from 24.9% of tax revenues to 30.1%. Child allowances were severely cut. See also Bank of Israel (2014), and Strawczynski (forthcoming).

rate of new immigrants had been markedly lower than that of the established population. This means that immigrants did not fully exercise their voting rights and therefore did not influence the political economy equilibrium in Israel as much as the established population. A similar low immigrant voter turnout pattern is reported by Messina (2007) and Bird (2011) for Western Europe.

However, a later study about voter turnout patterns of new immigrants to Israel in the 2001 elections, conducted by Arian and Shamir (2002), reverses this finding. The new immigrants in this study were pre-dominantly from the FSU, and the study found no marked difference in the voter turnout rates between these new immigrants and the established population. This is indeed a unique feature of the 1989–2001 immigration wave from the FSU.

5.1 *Political-Economy Theory*¹⁷

To better understand the balance of the political-economic forces at play, one has to analyze them in a general-equilibrium setup. Razin and Sadka (2017) provide such a stylized general equilibrium model with free migration, where wages are endogenous and redistribution policy is determined by (endogenously determined) majority voting.¹⁸ They address the issue of how immigration can reshape the political balance of power, especially between skilled and unskilled workers and between native-born individuals and immigrants, and consequently the political-economic equilibrium redistribution policy of the welfare state. The general equilibrium model could provide insights into how in a “natural experiment” manner, an external supply-side shock triggers a wave of skilled migration. The shock can then lead to a change in wages, migration flows, and political coalitions, thereby reshaping the political-economy balance and the redistributive policies.

5.2 *Human Capital Investment*

There are just two types of workers: “skilled” (with a symbol S) and “unskilled” (with the symbol U). The wage per unit of labor of a skilled

¹⁷Based on Razin and Sadka (2017).

¹⁸The model is based on Razin et al. (2002a, b).

worker is w , whereas an unskilled worker earns a wage of ρw per unit of labor, where $\rho < 1$.¹⁹ All native-born individuals (N) are initially unskilled. However, a native-born individual can acquire education at some cost (c) and becomes skilled. Individuals differ from one another through their cost of education: There is a continuum of native-born individuals, distinguished only by their cost of education. For notational simplicity, we normalize the number of native-born individuals to one. An individual is identified by her cost of education, so that an individual with a cost of c is termed a c -individual. We assume for simplicity that the cost of education is uniformly distributed over the interval $[0, \bar{c}]$.

How relevant is the cost of education for income distribution?

Caplan (2018) calculates the returns on a university education and argues that the low graduation rates of marginal students, and the fact that, for a given level of qualification, the more skilled people tend to earn more, mean that the return on a four-year degree in the US ranges from 6.5% for excellent students to just 1% for the weakest ones. Zimmerman (2014) compares the earnings of high school graduates in Florida whose grades were close to the minimum for admission to a good state university. Those just above the cut-off were much more likely than those just below to start courses in good institutions. They graduated at a rate similar to that of the broader student population. They went on to earn considerably more than those just below the cut-off, and their return on investment was substantial. There is also the added consideration of the degrees as signaling devices. The education premium includes the income-boosting effects of personal characteristics that are more likely among those with degrees, not because they acquired them at university, but because they possessed them on admission. As degrees have become more common, their importance as signaling devices is rising. Recruiters, who pay none of the cost of jobseekers' higher education, are increasingly able to demand degrees in order to screen out the least motivated or competent.

¹⁹The model assumes that the only difference between skilled and unskilled labor is the efficiency units of labor each worker possesses. This simplifying assumption is made in order to focus on the political economy aspects of the analysis. There could be more tension between skilled and unskilled workers, such that the two types are complements (e.g., Doepke and Zilibotti 2005). In this case, an increase in the supply of one type is beneficial to the other (e.g., immigration of unskilled workers increases the marginal product of skilled workers). One can also assume that capital is more complementary to skilled workers than to unskilled (e.g., Krusell et al. 2000).

Burrowes et al. (2014) found that companies routinely require applicants to have degrees, even though only a minority of those already working in the role have them. This increases the graduate premium—but by punishing non-graduates rather than boosting the absolute returns to degrees.

5.3 *Endowments and Income Groups*

All native-born individuals are endowed with E units of a composite good, the single good in this economy. All individuals inelastically supply one unit of labor. If a c -individual acquires education and becomes skilled, her income²⁰ is denoted by I_S^N .

$$I_S^N(c) = (1 - t)w + b + (E - c)(1 + r)$$

where t is a flat wage tax rate²¹; b is a uniform (lump-sum) per capita social benefit; and r is the interest rate—the return on capital. If a c -individual decides not to acquire education and remain unskilled, her income (denoted by I_U^N) is

$$I_U^N = (1 - t)\rho w + b + E(1 + r) \quad (1)$$

($I_S^N(c)$ depends on c , whereas I_U^N does not.)

Thus, there is a cutoff level of cost, c^* , so that all c -individuals with $c \leq c^*$ will choose to become skilled, and all the others (with $c \geq c^*$) will remain unskilled. This c^* is defined by

$$(1 - t)w + b + (E - c^*)(1 + r) = (1 - t)\rho w + b + E(1 + r).$$

Upon some re-arrangement, the cutoff level of the cost of education, c^* , becomes:

$$(1 - t)(1 - \rho)w = c^*(1 + r).$$

That is, c^* is solved from the equality between the return on education and its cost. A c^* -individual is just indifferent between acquiring education (and thereby becoming skilled) or staying unskilled. Upon further

²⁰This specification assumes that capital does not depreciate at all.

²¹In an unpublished version, Razin and Sadka extended the tax to apply to capital income as well.

re-arrangement, c^* is defined by

$$c^* = \frac{(1-t)(1-\rho)w}{(1+r)}. \quad (2)$$

c^* may well exceed E , which means that those c -individuals with c below but close to c^* (which is endogenous) actually borrow in order to acquire education. Naturally, the payoff in terms of the higher wage would more than offset the borrowing cost. For those individuals $E - c$ is negative.

We employ a static framework within which all economic and political processes occur simultaneously with no time dimension.²² For instance, we do not distinguish between the time in which the education is acquired and the time when the earnings occur. Similarly, capital earns its return r at the same time it is employed.

The number of c -individuals with $c \leq c^*$ is the number of native-born skilled individuals. Denoting this number by n_S , it follows that

$$n_S = \frac{c^*}{\bar{c}}. \quad (3)$$

Then, the number of native-born unskilled individuals, n_U , is thus given as

$$n_U = 1 - n_S. \quad (4)$$

Aggregate investment in human capital (education), denoted by H , is then given as

$$H = \int_0^{c^*} c \cdot \frac{1}{\bar{c}} dc = \frac{(c^*)^2}{2\bar{c}}. \quad (5)$$

Therefore, the aggregate stock of physical capital, K , is equal to²³

$$K = E - H. \quad (6)$$

²²Such a framework is akin to a steady state in a dynamic model with rational expectations.

²³The reader will recognize the implicit assumption that the economy is not open to international trade. The effect of trade openness on inequality is therefore abstracted from the analysis.

There are also two types of immigrants: the skilled, who can earn a wage w in the receiving country, and the unskilled, who earn a wage of ρw in the receiving country. None of them has any initial endowment. The immigrants come to the receiving country after they have already made and implemented the decision whether to acquire or not acquire education. Thus, it is exogenously given who is skilled and who is unskilled. In other words, the economy benefits from the skilled immigrants because it does not have to pay for the cost of investment.

The income of skilled and unskilled immigrants, respectively, is:

$$I_S^M = (1 - t)w + b \tag{7}$$

and

$$I_U^M = (1 - t)\rho w + b. \tag{8}$$

The income of the native-born population as a function of c is depicted in Fig. 8. $I_S^N(c)$ declines in a straight line until it reaches c^* , where

$$\begin{aligned} I_S^N(c^*) &= (1 - t)w + b + (E - c^*)(1 + r) \\ &= (1 - t)\rho w + b + E(1 + r) = I_U^N. \end{aligned}$$

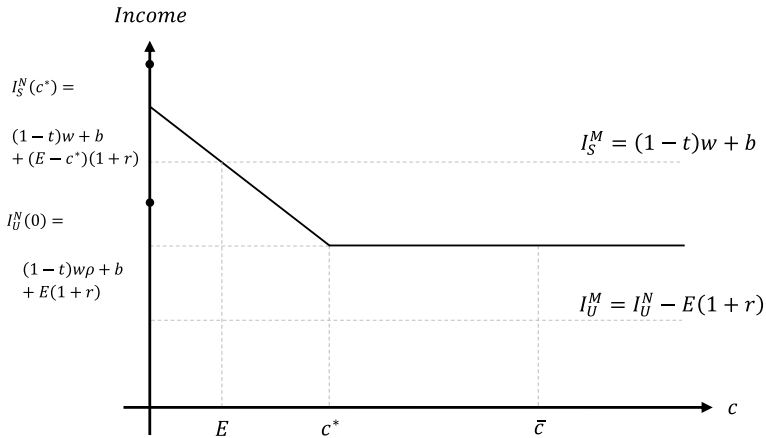


Fig. 8 Income groups as a function of the cost of education

The labor income of unskilled workers, both native-born and immigrants, is the same, but the total income of an unskilled immigrant, which is $(1-t)\rho w + b$, is definitely below the income of an unskilled native-born individual, the difference being the capital income enjoyed by the unskilled native-born population, namely $E(1+r)$. The total income of a skilled immigrant is definitely higher than the total income of an unskilled immigrant, because of the higher wage earned by the skilled, whereas both have no other income. The income of the skilled immigrant population exceeds the income of the skilled native-born population with $c > E$, but falls short of the income of the skilled native-born population with $c < E$.

The income of a skilled immigrant is $I_S^M = (1-t)w + b$, whereas the income of a skilled c -individual is $(1-t)w + b + (E-c)(1+r)$. Therefore, as long as $E-c$ is positive (i.e. the c -individual does not borrow in order to invest in human capital), then $I_S^N(c) > I_S^M$. However, if $E-c < 0$ (i.e. the individual borrows in order to invest in human capital), then the income of the skilled immigrant (I_S^M) is greater than the income of the skilled native-born individual (I_S^N). In sum, we have the following ranking of incomes:

$$I_U^M < I_U^N = I_S^N(c = c^*) < I_S^N(c > E) < I_S^N(c = E) = I_S^M < I_S^N(c < E).$$

5.4 Supply of Immigrants

In general, Israel employs an unrestricted immigration policy. We envisage an economy that allows any immigrants to come. Thus, the decision whether to immigrate or not rests solely with the migrant. Each potential immigrant has some reserve income, so that he or she will migrate if and only if he or she will be accorded a higher income in the destination country.

Due to various factors (such as skill, family ties, age, etc.) this reserve income is not the same, but there is rather a continuum of such reserve incomes. Distinguishing between the two skills groups, we then assume that there is an upward sloping supply function for each skill group, depending on the income accorded to immigrants in the receiving country. Denoting the number of skilled migrants by m_S , the supply

function of skilled immigrants is given as an iso-elastic function:

$$m_S = B_S \left(I_S^M \right)^{\sigma_S} \quad (9)$$

where B_S and σ_S are some positive parameters. Similarly, the supply function of unskilled immigrants is given as

$$m_U = B_U \left(I_U^M \right)^{\sigma_U} \quad (10)$$

where m_U is the number of unskilled immigrants and B_U and σ_U are some positive parameters.

5.5 *Production and Factor Prices*

We employ a Cobb-Douglas production function

$$Y = AK^\alpha L^{1-\alpha}, \quad A > 0, 0 < \alpha < 1 \quad (11)$$

where Y is the gross domestic product, A is a total factor productivity (TFP) parameter, and α is the capital-share parameter (and $(1 - \alpha)$ is the labor-share parameter). Symbol L indicates the total labor supply in efficiency units and is given as

$$L = n_S + \rho n_U + m_S + \rho m_U \quad (12)$$

The competitive wage per efficiency unit of labor (w) and the competitive interest rate (r) are given as the marginal productivity conditions

$$w = (1 - \alpha)A \left(\frac{K}{L} \right)^\alpha \quad (13)$$

and

$$r = \alpha A \left(\frac{K}{L} \right)^{1-\alpha}, \quad (14)$$

where we assume for simplicity that capital does not depreciate.

The model exhibits the standard gains from trade argument. (See Appendix, which reminds us who the gainers and losers are from the flow of skilled immigrants.)

5.6 *Income Redistribution System*

We employ a very simple system of redistribution. Wages are taxed at a flat rate of t . The revenues are distributed by a uniform per-capita transfer, b .

We assume that the immigrants qualify for all the benefits of the welfare state, and they are naturally subject to state taxes. Therefore, the government budget constraint is as follows:

$$twL = b(1 + m_S + m_U) \quad (15)$$

Assuming that the government has no other revenue needs, except for redistribution.²⁴ It follows from Eq. (15) that t and b must be of the same sign. A positive wage tax (t) allows the government to accord a positive transfer (b) to all. A wage subsidy (namely, a negative t) requires the government to impose a lump-sum tax (negative- b) on all. When t and b are positive, the tax-transfer system is progressive. When they are negative, the system is regressive.

With unrestricted immigration the flows of immigrants m_S and m_U are determined by the immigrants themselves according to their reserve incomes (embedded in the supply functions, (11) and (12)), and the income accorded to them in the receiving country. There are therefore only two policy variables—the tax rate, and the social benefit b . However, as the government is constrained by a balanced budget (condition (15)), it follows that there is essentially only one policy variable. Once t is chosen, all the other economic variables are determined in equilibrium, including the tax revenue (twL), the number of immigrants (m_S , and m_U), and b . Alternatively, once b is chosen, all the other economic variables are determined in equilibrium.

Choosing t as the single policy variable, we note that there remain 15 endogenous variables

$$w, b, r, c^*, I_S^M, I_U^M, n_S, n_U, I_S^N, m_S, m_U, H, K, Y, L.$$

²⁴One may wonder why there is no tax on the initial endowment (E). However, in a dynamic setting which we mimic in a static framework, E represents accumulated savings, and taxing it will be distortive. Furthermore, because all native-born individuals possess the same initial endowment, taxing it in our static model does not distribute income across native-born income groups, but taxing E amounts to transferring income from the native-born individuals to the immigrants. In a static model such a tax is not distortive.

There are also 15 equations in the model—(2)–(9) and (10)–(16)—from which the endogenous variables are to be solved.²⁵

The policy variable t is chosen by some natural and plausible version of a majority vote.²⁶

There is a two-stage voting system as follows. In the first stage the regressivity-progressivity of the system is determined. If the tax rate, t , and the social benefit, b , are both positive, the system is progressive. If the tax rate, t , and the social benefit, b , are both negative, the system is regressive. The system's progressivity is chosen by the *majority* of the voters.

In the second stage the magnitudes of the tax system, t , and b , are chosen by the *largest sub-group* of the majority coalition.²⁷

Upon observation, we can see from Eqs. (2) and (3) that the direct effect of the tax-transfer policy on the incomes of unskilled native-born individuals and unskilled immigrants is the same, and works through the net wage income $(1 - t)\rho w + b$. For the unskilled immigrant this is the only effect of the tax-transfer system. However, for unskilled native-born individuals, there is also an indirect effect through capital income $I(1 + r)$ (r depends on t), but this indirect effect is of a second-order magnitude compared to the direct effect.

Similarly, the direct effect of the tax-transfer policy on the incomes of skilled native-born individuals and skilled immigrants is the same, and works through the net wage income $(1 - t)w + b$. Here again, there is also an indirect effect on the income of skilled native-born individuals (but not on the income of skilled immigrants) through the capital income $(E - c)(1 + r)$. Here again the indirect effect is of second-order magnitude.

Thus, all unskilled workers (both native-born individuals and immigrants) are affected by the tax-transfer policy mainly through $(1 - t)\rho w + b$, whereas all skilled workers (both native-born individuals and immigrants) are affected mainly by $(1 - t)w + b$. It is therefore natural that all the unskilled individuals, whose wages are only ρw , would rather prefer to tax wage income and take advantage of all the skilled workers,

²⁵In addition, Eq. (1) defines I_S^N as a function of c .

²⁶Since the composition of voters is endogenous, and the single-peak property of the voter preferences is not guaranteed, the median voter proposition is invalid.

²⁷See also Lee et al. (2004).

whose wages are higher – w . Thus, the unskilled workers prefer a policy that entails a positive tax and a positive transfer. Therefore, if the unskilled workers (both native-born individuals and immigrants) constitute a majority, then the political economy equilibrium tax and transfer will be positive—a progressive tax-transfer system. However, due to the indirect effect, which applies only to unskilled native born individuals, the most preferred tax and transfer policy is not necessarily the same for the unskilled native-born individuals and the unskilled immigrants. We then postulate that when the unskilled form a majority, the tax-transfer policy chosen is the most preferred policy by the larger of the two sub-groups (unskilled native-born workers or unskilled immigrants).

Similarly, the skilled (both native-born individuals and immigrants, whose wage is higher than the unskilled) would opt to grant a subsidy to the wage, financed by a lump-sum tax. That is, they opt for negative t and b —a regressive tax-transfer policy. In this case too, there is also an indirect effect which applies only to the skilled native-born individuals. Thus, the skilled native-born and skilled immigrant groups do not have the same preferred tax-transfer policy. In this case too, we postulate that the political-economy tax-transfer policy is the most preferred policy of the larger sub-group.

The indirect effect of the tax-transfer policy, which works through capital income, $(E - c)(1 + r)$ is not the same for all members of the skilled native-born sub-group (because it depends on c). In this case, we assume that the median voter within this group prevails.

If we keep all other parameter values constant and increase only the parameter value of B_S , we can isolate the effect of a supply side shock. That is, we give a positive shock to the supply of skilled immigrants. We find that number of skilled immigrants (m_S) rises sharply. Skilled workers now constitute the majority $x_S + m_S > x_U + m_U$. As predicted, the political-economy tax-transfer policy now becomes regressive: t and b are negative. That is, there is a wage subsidy financed by a lump sum tax. In addition, the skilled immigrants form the larger of the two skilled sub-groups, (i.e. $m_S > x_S$) and their most-preferred tax-transfer policy now becomes the political-equilibrium tax-transfer policy. Furthermore, the politically dominant sub-group of skilled immigrants drives out—all unskilled immigrants ($m_U = 0$) by according them zero disposable income ($I_U^M = 0$).

It is worth noting that the unskilled native-born individuals were initially the politically dominant sub-group, and dictated their most-preferred progressive tax-transfer. Following the supply-side shock of skilled immigration, the unskilled native-born individuals lose their dominance to the skilled immigrants, who are now dictating their most-preferred regressive tax-transfer policy. Nevertheless, the unskilled native-born individuals are better off, because the return on their capital income (namely, r) rises sharply (in units of the all-purpose composite good). Even though the wage per efficiency unit falls, the sharp rise in the interest rate (from 1.55 to 2.94) more than compensates the native-born unskilled workers for the decline in wages. For the same reason, the skilled workers (native-born and immigrants) are all better off. Thus, except for the unskilled immigrants, who are driven out, all other income groups gain from the skilled-immigration supply shock.

The influx of skilled labor raises the overall productivity of the labor force. Consequently, it also raises the tax revenue needed for shouldering the pre-existing redistribution policy. This force works towards more generous redistribution, because it is fiscally less burdensome. Counteracting this pro-distribution force, however, is the rebalancing of the political coalition triggered by the increased share of higher-income skilled workers in the voting population. The result is that the emerging decisive voter *reverses* the pre-existing redistribution regime.

It is worth explaining the model-specific forces that totally drive out the unskilled immigrants in the wake of the skilled-immigration supply shock. The model assumes perfect substitutability between skilled and unskilled labor in production: Each unit of an unskilled worker's time is equivalent to ρ units of a skilled worker's time. Thus, unskilled immigrants provide no productivity benefits to skilled workers, while constituting a fiscal burden. Therefore, the new skilled-dominant coalition drives them out altogether by pushing their disposable income all the way to zero. The assumed perfect substitutability in production does serve to highlight the anti-unskilled-immigration forces within the ruling skilled coalition. The perfect labor substitutability assumption overstates market-based inequality in the model. If the supply elasticity of skilled immigrants is larger than that of unskilled immigrants, it will reinforce the inflows of skilled immigrants and the outflows of unskilled immigrants because of the immigration shock. In a steady state of standard dynamic models, in general, there is more labor substitutability than during the transition-dynamic state. This provides plausibility to our perfect substitutability

assumption. If one introduces Heckscher-Ohlin elements of the traded-non traded sectoral structure into the analysis, it will serve in our model to understate market-based income inequality in our one-sector model, because these elements tend to mitigate the decline in wages following the migration shock.²⁸

6 THE MIGRATION-INEQUALITY PATTERNS

The model attempts to rationalize the sharp rise in income inequality following the Soviet Jewish exodus shock, based on unusual electoral participation by the new immigrants. It allows us to explore how a migration supply side shock alters immigration patterns while reshaping the political-economy balance. We develop a stylized political-economy model with free immigration.

There are important political-economy mechanisms at work. First, the influx of skilled immigrants depresses the incentives for unskilled immigrants to flow in, though they are still free to do so. Second, the fiscal burden of redistribution policies diminishes from the viewpoint of the decisive voter. That is, the influx of skilled labor raises overall productivity of the labor force. Consequently, it also raises the tax revenue needed for shouldering a redistribution policy. However, counteracting this pro-distribution force is the rebalancing of the political coalition, due to the increased share of skilled workers in the population. Therefore, the emerging decisive voter reverses the pre-existing redistribution regime, notwithstanding the decline in the fiscal burden. Third, unskilled native-born individuals may nevertheless become well off, even though they lose their political influence.

To sum up, the model's predictions are as follows. First, the shock reduces the incentives for unskilled immigrants to flow in. Second, the tax-transfer system becomes more regressive. Third, All other native-born income groups are also made better off thanks to the rise in the return to their capital, though the unskilled native born lose the political influence they had before the immigration wave, they gain from the immigration.

The positive economic predictions seem to be consistent with data. The theory is motivated by Israel's unique immigration experience of a supply-side shock triggering skilled immigration and the concurrent

²⁸See Burstein et al. (2017).

decline in welfare-state redistribution. This paper develops a model that can provide an explanation for the mechanism through which such a shock can also reshape the political-economy balance and redistributive policies.

The paper highlights the differences in the political-economy induced redistribution policies between the cases in which immigrants participate in the electoral system and those where they do not. When immigrants are allowed to vote, and they take advantage of this right, then, following the shock, all income groups gain except low-skilled immigrants, who lose. When immigrants are not allowed to vote, or choose not to participate in elections, all income groups gain, except the skilled immigrants, who lose.

7 CONCLUSION

The chapter describes the unique experience of Israel. Within a short time period in the early 1990s, Israel received hundreds of thousands of immigrants from the FSU. The distinctive feature of this massive wave of immigration was the immigrants' high skill level. Following the immigration wave, the political-economy balance shifted towards a more regressive government policy. Such a significant change in redistribution over time is underpinned by a secular reduction in income taxes. Income tax fell from 30% of revenues in 2000 to 20.4% in 2015. At the same time, VAT increased from 24.9% of tax revenues to 30.1%. It caused a sharp new upward trend of disposable income inequality, but without a parallel change in market income inequality. That is, the welfare state took a sharp regressive turn. The model developed in this paper helps explain what is shown Fig. 6: a moderate rise in net income inequality after 2000, which is a combination of declining market income inequality, and an offsetting decline in income redistribution. The influx of high-skilled immigrants can explain both: a rising middle class and a rebalanced political economy equilibrium.

This underscores the role played by the post-migration political balance in triggering lower redistribution.

APPENDIX: IMMIGRANTS WHO VOTE VS. IMMIGRANTS WHO DO NOT VOTE

The immigration-inequality model, motivated by the Israeli experience with the wave of skilled immigration from the FSU, simulates the effects of a supply shock of skilled immigration on the political economy equilibrium tax-transfer policy. To highlight the role of electoral participation by immigrants, we compare two political regimes. In the first one immigrants do not vote, and in the second one they do.

We start with parameter values that entail the unskilled (both native-born and immigrants) as a majority. This case is described in Figure 9a and b. As predicted, the political-economy tax-transfer policy is progressive: t and b are positive. Also, native-born individuals form a majority of the unskilled population. We then contemplate a skilled immigration supply shock. That is, we keep all other parameter values constant and increase the skilled immigration parameter value. Following the supply-side shock of skilled immigration, in part (a), the unskilled native-born population does not lose its political dominance to the skilled immigrants. Their most-preferred progressive tax-transfer policy is unchanged. Nevertheless,

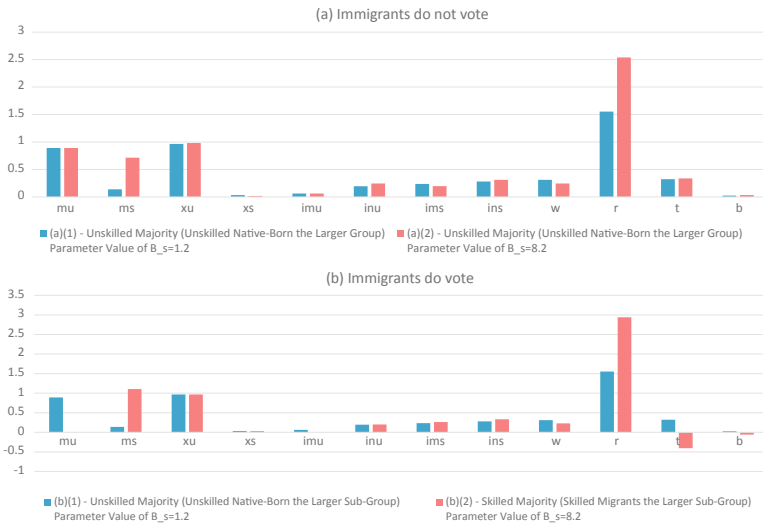


Fig. 9 The effect of a supply shock of skilled immigration

the unskilled native-born population is better off, because the return on its capital income (r) rises.

Following the supply-side shock of skilled immigration, in part (b), the unskilled native-born population loses its dominance to the skilled immigrants, who are now dictating their most-preferred regressive tax-transfer policy. Nevertheless, the unskilled native-born population is better off because the return on its capital income increases (Fig. 9a, b).

The comparison between the two cases is insightful. When immigrants are not given the right to vote, the supply-side shock of skilled immigration (case (a)) renders the fiscal system more progressive. By contrast, when the immigrants do have the right to vote (and fully exercise that right), they cause the fiscal system to be regressive. It is noteworthy that when they are not allowed to vote, the skilled immigrants lose and all other income groups gain. When they are allowed to vote it is the unskilled immigrants who lose, and all other income groups gain.

The model therefore helps explain what is shown in Fig. 1 for the Israeli episode: a rise in income inequality between 1990 and 2003, which is a combination of declining market income inequality and a more than offsetting fall in redistribution. The influx of high-skilled immigrants can explain both: A rising middle class and a rebalanced political-economy-based income redistribution policy.

Notation:

$$\begin{aligned}
 w &= \text{wage}, r = \text{return}, I_S^M \text{ skilled - migrant - income,} \\
 I_U^M &= \text{unskilled - migrant - income, } n_S = \text{skilled native numbers,} \\
 n_U &= \text{unskilled native numbers,} \\
 I_U^N &= \text{unskilled native income, } I_S^N = \text{skilled native income, } m_S \\
 &= \text{skilled migrant's numbers,} \\
 m_U &= \text{unskilled migrant's numbers, } t = \text{tax rate, } b = \text{is social benefit.}
 \end{aligned}$$



Globalization at Work: Israel's Experience

1 INTRODUCTION

Globalization, the integration of markets in goods, services and capital, whose pace accelerated in the 1990s with the fall of communism, is currently facing headwinds. Globalization and new-technology forces accelerated the decline in low-tech manufacturing industries, the rise of the financial and the surge of immigration. Brexit may have been the first wave of anti-globalization and rising populism that gushes over most advanced nations. Then came the 2017 change of guards in the US. Meanwhile, European countries, straightjacketed inside the confines of the single currency area like Germany, France, Greece, the Netherland, Spain, Poland and others, witness the anti-EU forces gather strength. Israel in many ways provides a counter example. Globalization-technology forces, like the technology surge, the new markets in East Asia, and immigration waves, have been a boon. Israel's remarkable developments provides an historical counter example.¹

¹Israel fast development although unique, is not unknown elsewhere. Ireland somewhat parallels Israel in awesomely benefitting from globalization. Ireland entered the 1950s as a very poor post-colonial society. However, it realized major successes by the integration into the EU, and reaching an elite hi-tech status. Ireland, was able to attract from the rest of the world (other than the EU) massive FDI, thanks to its being a tax-sheltered gate to the EU massive markets. Ireland however had relatively little regulation of its banking sector: this allowed the credit bubble to flourish in the wake of the 2008-global-financial

The State of Israel has registered remarkable economic achievements over its lifetime. It emerged in 1948 as a rather weak and impoverished agricultural economy. Over the past seven decades, though, Israel thoroughly transformed itself into a strong and wealthy industrial economy, one that has become a world leader in many areas of high technology, ranging from computers to medicine, as attested to by its membership in the Organization for Economic Co-operation and Development (OECD). Thanks in large part to its steadily advancing integration into the global economy; Israel has moved firmly out of the developing world and into the developed world.² Israel's strong growth since it stabilized inflation in 1985 owes much to an international economy in which capital, labor, and ideas are mobile and in which trade and investment flow readily across far-flung international borders. Israel has had a remarkable development, emerging from a low-income high-inflation developing economy in the 1970s, to a medium to high income advanced economy in the 2000s; at all stages of its development globalization played a key role.

We begin with an inquiry into the causes and consequences of the hyperinflation that rocked the Israeli economy in the mid 1980s, as well as into the stabilization measures instituted by Israeli policymakers that eventually after a decade and a half, tamed the problem. The reduction in inflation, coupled with the mass migration of highly skilled immigrants from the former Soviet Union throughout the 1990s, allowed the Israeli economy to gather a head of steam. The worldwide financial crisis that began in 2008, which was followed by the "Great Recession", had only a minor and fleeting effect on the Israeli economy in comparison to many other advanced economies, in large part because of the financial, fiscal, and monetary reforms Israeli policy-makers had put in place to contain the hyper-inflation of the mid-1980s.

The chapter offers an economic-history perspective of the long struggle with Inflation. It covers the early acceleration to three-digit levels, lasting 8 years; The stabilization program, based on political backing triggered sharp fall in inflationary expectation, and consequently to sharp inflation

crash. It's over exposed banking sector collapsed during the financial crisis. Ireland has continued to be burdened by the Eurozone's nearly secular stagnation. Israel robust performance during the crisis is partly attributable to not being a member of a single currency area.

²See Razin (2018a, b).

reduction to two-digit levels; The convergence to the advanced countries' levels during the "great Moderation"; And Israel' resistance to the deflation-depression forces that the 2008 crisis created. The emphasis is on the forces of globalization and the building of institutions, political, regulatory, financial, budget design, and monetary, which helped stabilize prices and output. Analysis identifies the crucial role played by inflation expectations in constraining policy makers regulating inflation pressures.

The chapter is organized as follows. Section 2 outlines the inflation crises. Section 3 discusses the political-economy underpinning of the inflation crisis. Section 4 discusses the end to the political deadlock. Section 5 analyzes the interactions between inflation and fiscal revenues. Section 6 analyzes balance-of-payment crises. Section 7 emphasizes the role of globalization in taming domestic inflation. Section 8 describes the climb down from two-digit to one-digit inflation rates. Section 9 observes the convergence of Israel's inflation rates to those of the industrial world economy. Section 10 analyzes the resistance in Israel to the depression-deflation forces coming from the "great recession". Section 11 concludes.

2 INFLATION CRISIS

Israel's Inflation accelerated in the 1970s, rising steadily from 13% in 1971 to 111% in 1979. Some of this higher inflation was "imported" from the world economy, instigated by extreme oil price rises in 1973 and 1979. Inflation kept gathering pace. From 133% in 1980, it leaped to 191% in 1983 and then to 445% in 1984, threatening to become a four-digit figure within a year or two. After several failed efforts, the successful phase of the stabilization of the Israeli economy began with the heterodox program introduced in July 1985. The initial success of the stabilization program included a decrease in inflation, from 445% in 1984 to 185% in 1985 and 20% in 1986. There was also an increase in real economic activity, with the annual growth in business sector product per capita rising from 0.4% in 1984 to 4.3% in 1985 and 3.6% in 1986. However, in the second half of 1987, the economy slid into recession, an after-shock event. Inflation however did not converge to advanced countries' inflation.³

³Calvo and Vegh (1999) observe that in many high-inflation stabilization programs around the world inflation failed to converge to world averages. Real economic activity expanded in the early years of the stabilization program. Later in the program, a recession set in. Unlike Israel stabilization program, in many developing economies the program later collapsed.

Figure 1 describes the price level and the exchange rate paths for the inflation-rising period in the wake of the hyperinflation crisis, and the aftermath of the 1985 stabilization program.

The figure demonstrates the accelerated path of inflation, and the lagging path of exchange-rate depreciations in the 1980s. It highlights the sharp flattening of inflation that took place immediately after the implementation of the 1985 stabilization-policy package. All along, the depreciations fell short of inflation; therefore, the real exchange has been markedly appreciated throughout the period. The real-exchange-rate appreciation naturally corresponds also to the rise in unemployment, and output growth decline. Figure 2 describes the path of major output-and-employment indicators. They point out to severe slackness in economic

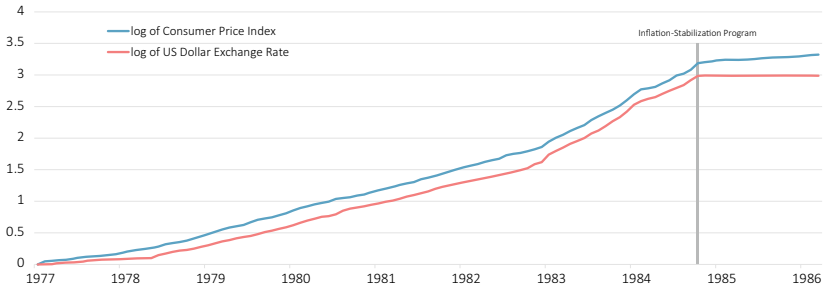


Fig. 1 Price level and exchange rate, 1977–1986 (Source Bank of Israel)

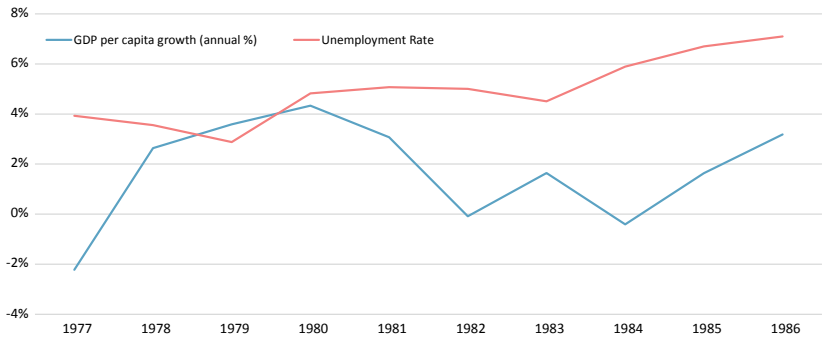


Fig. 2 Output growth and unemployment, 1977–1986 (Source Israel CBS, World Bank)

activity during the hyperinflation crisis leading to unprecedented unemployment.

Economic activity was impacted severely by the swelling credit frictions. Because the inflation crisis undermined the well-functioning of credit institutions. Banks and financial market regulation also failed during the 1980s. At the time, bank stocks accounted for more than 90% of all issued stocks in the stock market. Their monopoly power in the stock market allowed the large banks to build up low-cost loan portfolio, and give it out to borrowers with poor selection, and poor monitoring. Central bank oversight of commercial banks was almost non-existent. Israel's Securities and Exchange Commission was powerless, legally and administratively. Massive stock issues allowed banks to increase their available capital as a source of investments, loans, etc. To get market participants to continue investing in the large bank's stock, it began buying back its own stock. On October 6, 1983, known as the "Black Thursday", an onslaught of banks' stock sales brought down the stock market. Largest banks became state-owned through a swift bailout.

3 POLITICAL SHIFT

The economic crisis started to develop when the opposition "*Gahal*" (now "*Likkud*") party gained power for the first time since independence. The political upheaval in 1977, the so-called "*Mahapach*", was a game changer for economic policy in Israel. The newly elected government, adopting macroeconomic populist policy, abruptly switched away from a long-running economic regime, which had been able to maintain fiscal discipline in the presence of strong external shocks (the Yom Kippur War and the first Oil Crisis).⁴ Monetary policy was moderately accommodative, underpinned by a fixed exchange rate regime; shielded from capital

⁴Dornbusch and Edwards (1989) address macroeconomic populism in Latin America, which they roughly defined as policies that are favoured by a substantial part of the voting population, but which ultimately harm the majority of the population. They found that populism surfaces when the economy has endured a period of external shocks and domestic upheavals, and "a highly uneven income distribution usually presents a serious political and economic problem, providing the appeal for a radically different economic program". In the first phase after their policies are enacted, the populists are vindicated. Growth and wages indeed rise as a combination of profligate spending and intrusive government control do expand the economy. The surging government spending and mandated wage hikes tend to produce a temporary "sugar high", followed by a crash. Beneath the surface, however, the country's economic potential is deteriorating. Financial disorders appear. Rather than make the hard choice of returning to principled economic oversight, the populist leader recommitments to harmful policies and steers the country towards decline, capital flight, and sometimes debt crises. In all cases, write Dornbusch and

flights by capital controls. Notwithstanding the oil price shock, inflation was low double digit.

A useful way to understand the framework within which the economic policy was conducted prior to the political regime switch, and afterwards, is to think about the basic tri-lemma in international finance.⁵ In international finance, the tri-lemma stems from the fact that, in almost every country, economic policy makers would like to achieve the following goals: First, make the country's economy open to international capital flows, because by doing so, policy makers of a country enable foreign investors to diversify their portfolios overseas and achieve risk sharing. The country also benefits from the expertise brought to the country by foreign investors. Second, use monetary policy as a tool to help stabilize inflation, output, and the financial sector in the economy. This is achieved as the central bank can increase the money supply, reduce interest rates when the economy is depressed and reduce money growth, and raise interest rates when it is overheated. Moreover, the central bank can serve as a lender of last resort in case of financial panic. Third, maintain stability in the exchange rate. This is because a volatile exchange rate, at times driven by speculation, can be a source of broader financial volatility and makes it harder for households and businesses to trade in the world economy and for investors to be able to plan.

The problem, however, is that a country can only achieve two of these three goals. In order to maintain a fixed exchange rate and capital mobility, the central bank loses its ability to control the interest rate or equivalently the monetary base—its policy instruments—as the interest rate is anchored to the world interest rate by the interest rate parity, and the monetary base is automatically adjusted. This is the case of individual members of the European Monetary Union. In order to keep control over the interest rate or equivalently the money supply, the central bank has to let the exchange rate float freely, as in the case of the United States. If the central bank wishes to maintain both exchange rate stability and control

Edwards, "There were disastrous effects for those groups who were supposed to be the beneficiaries of the policies".

⁵The trilemma as a situation in which someone faces a choice among three options, each of which comes with some inevitable problems. In international finance it is cast in terms of economic regime choices. The international finance trilemma goes back to the classical works of Flemming (1962), and Mundell (1963). See Mankiw for blog interpretation (2010). For a balance of payments crisis model in the trilemma regime-switch framework, see Appendix 1A.

over the monetary policy, the only way to do it is by imposing capital controls, as in the case of China.

Following the 1977 political change, the economic regime switched from pegged exchange rate, capital controls and fiscal discipline to loosely managed exchange rate, relaxed controls on outgoing capital flows, and fiscal laxness. Right from the beginning, the new government lifted some capital controls without putting safe guards in place; that is, no prudent financial and banking regulatory measures existed. Intensive shifts in demand and supply for foreign exchange followed almost instantly. Key to the steady increase in inflation, the new populist government also embarked on an uncontrolled path of fiscal expansion accommodated by monetary expansion. Exchange rate and capital flow fluctuations called for the Bank of Israel to intervene occasionally, at first, and significantly later, in the foreign exchange market on a day-to-day basis to smooth out these fluctuations. A massive wave of capital flight caused over a few years a fast depletion of the stock of international reserves, which weakened the ability of Bank of Israel to intervene in the foreign exchange market. Following up on the open economy tri-lemma; asserting that a fixed exchange rate regime and perfect capital mobility must erode the ability of the central bank to stabilize employment and price fluctuations. Therefore, Israel lost control over inflation. Lax safeguards brought stock market crashes. The lesson learned from the first-generation currency crisis literature is that such inconsistent set of policies become quickly unsustainable; leading to massive speculative attacks on international reserves, followed rounds of financial and stock market crashes.

4 POPULISTIC SEIGNIORAGE FINANCE

Israel's high inflation posed sharp challenges to both political and economic institutions. Failing economic governance made it essential for the government to raise revenue through money expansion. At the time when the newly elected government was catering to populist demands, the printing press was used to finance the fast-expanding government spending and transfers.⁶

⁶The temptation to inflate during the 1977–1985 high inflation period was moderated by the fact that, due to a preexisting stock of nominal loans to by government to the private sector and the Olivera-Tanzi effect, government revenue from seignorage was much smaller than would appear to be the case at first blush, and at times, perhaps even

Dividends from seigniorage (the profit made by a government by issuing currency) are derived from the exclusive ability of the central bank to issue bank notes. In addition, central bank can hold required reserves from commercial bank deposits, which pay no interest. Central banks can also inflate the non-indexed portion of the public debt and raise the real revenue intake with progressive tax schedule. However, how much can the central bank lower the consolidated-government fiscal burden depends not just on how actual inflation is consistent with expected inflation.⁷

A central lesson from the Friedman (1971) is that steady-state seigniorage from revenue maximizing central bank is small. However, Israel, as well as previous historical episodes, offer a counter example. Inflation spikes can be a significant source for government revenue. Time inconsistency on the part of the central bank in producing these spikes are due to harmful incentives. They lead policymakers to implement inflation levels that they may eventually come to regret. These incentives are no rarity; they are very common in economies that do not have the instruments to reach a first-best equilibrium. Moreover, these incentives cannot be ruled out, even under rational expectations in such a time-inconsistent setup.

One crucial issue about inflation is to identify whether existing inflation is temporary in nature, reflecting short-term spikes, or whether it is useful to analyze it as if it is a steady state phenomenon. An empirical paper which analyzed the Israeli inflation in those years is Patinkin (1993), but his sample ends before arriving at the peak of the hyper-inflation.

The steady state seigniorage curve in Fig. 3, which shows two distinct (steady state) inflation levels for a given amount of seigniorage, led some

negative. The jump to a high inflation plateau was due to a series of policy actions, or inactions. Once inflationary expectations adjusted upward this process became a persistent feature of the economy making it costly to stabilize due to the expected reduction in economic activity associated with stabilization. The traditional analysis of steady state seigniorage appears therefore of secondary importance and I would consider dropping it or drastically reducing it.

⁷Indeed, Edi Karni (1983), made rough calculations and found significant seigniorage revenue that Israel's hyperinflation generated. In a related context, Cukierman (1998 a, b) brings evidence for a significant share of revenue attributable to seigniorage in the 1920s' German hyperinflation.

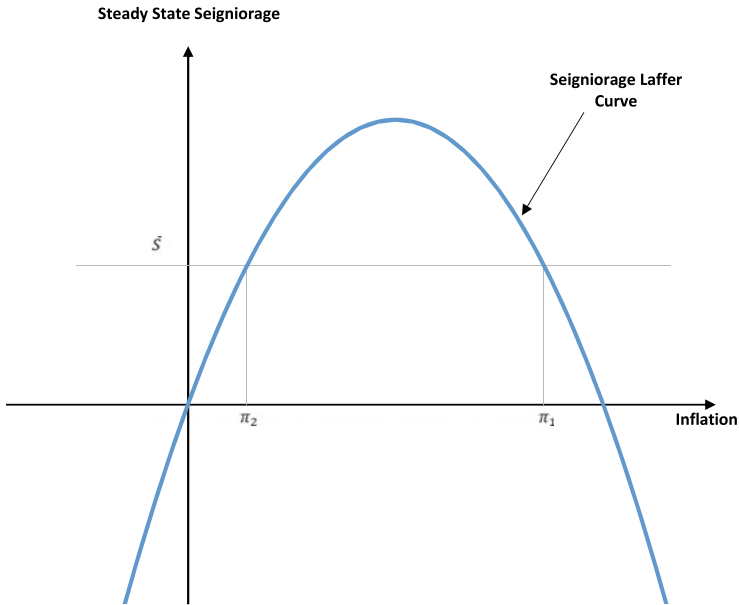


Fig. 3 Steady state seigniorage and inflation

economist to attribute the cause of the high inflation to just expectations-based phenomenon that can be rectified by synchronizing wages, prices and exchange rates alone.⁸

On this issue, Calvo (2016) writes: “Repeated use of surprise inflation is unlikely to be successful in increasing seigniorage, because the public will start to expect a rate of inflation larger than the one that optimizes

⁸Liviatan (1984) offered a heuristic explanation for the nature of Israel’s hyper-inflation based on “inflation inertia”. Inflation inertia, he argued, is caused due to the government’s periodic attempts to boost exports, the indexation of wages to the cost of living and the adjustment of public expectations to this vicious cycle. Each time the government devalued the currency to support exporters, prices rose and wages followed. Liviatan suggested using the US dollar as an anchor by fixing the Israeli shekel exchange rate to it: this “will lower inflation to the level of the inflation in the United States,” and it would not require the use of administrative and coercive powers which “undermine the foundation of the liberal regime”. Bruno and Fischer (1984) argue that contrary to the orthodox economic view, for a similar level of public spending, there are multiple levels of inflation due to the “meta-stable equilibrium” that is caused by indexation, the financial structure, and the exchange rate system. See Kempf (2018).

steady-state revenue from inflation. Thus, eventually the economy may land on the excessive-inflation territory highlighted in Friedman (1971). However, this is not due to an elementary economics error on the side of the central bank, as Friedman's results might lead us to conclude. An inflation spike is, in the short run, one of the cheapest and most expeditious manners for securing additional fiscal revenue. Moreover, this 'carrot' is always there. As noted, though, a problem arises if the government repeatedly reaches out for the carrot. However, even in this case, the evidence presented in Friedman (1971) does not prove that authorities were making an error. To assess that, one needs information of how quickly the public catches up with the inflation-spike strategy".

Even in the time inconsistency paradigm,⁹ however, there is room for policy. One could try to neutralize the harmful incentives if the central bank banned from extending loans to the fiscal authority. Following almost 8 years of the hyperinflation economic chaos, from 1977 to 1985, the Israeli voters brought about some major political rebalancing towards the political center. The newly established Unity Government ("Likkud" plus "Avoda") implemented successfully key stabilization measures; all of them required political consensus.¹⁰ Following 8 years in which the seigniorage served as a means of financing the deficit, a new legislation ("*Khok Habesderim*") allowed the government to exercise tighter control over its spending and taxation. A new law forbade the Central Bank to monetize the budget deficit ("*Khok Lee Hadpassa*"), and ended the accommodating monetary policy. A Tri-Party agreement between the government, the Federation of Labor ("*Histadrut*") and the association of private-sector employers stabilized the wage-price dynamics and

⁹See Kydland and Prescott (1977) and Calvo (1978).

¹⁰Schneider and Tornell (2004) provide a model of boom-bust episodes in middle-income countries which may explain the logic of the boom-bust episodes which followed the stabilization program. It is based on sectoral differences in corporate finance: the non-tradable sector (e.g., real estate and financial services) is special in that it faces a contract enforceability problem and enjoys bailout guarantees (e.g. bailing out mortgages). As a result, currency mismatch in the balance sheet arise endogenously in that sector. This sectoral asymmetry allows the model to replicate the main features of observed boom-bust episodes. In particular, episodes begin with a lending boom and a real appreciation, peak in a self-fulfilling crisis during which a real depreciation coincides with widespread bankruptcies, and end in a recession and credit crunch. Israel's economy fully recovered in the late 1980s and early 1990s, a time when there was a new wave of immigrants from the former Soviet Union (Chapter 2). For detailed account of the stabilization policy, see Razin and Sadka (1993).

enabled a sharp nominal devaluation that ended in a competitiveness-boosting real devaluation. The exchange rate depreciation had not passed through to wages and prices; in high likelihood because the entire macro regime has changed; as in the modern expectations-based macroeconomic setup. Because of the *credibility* of the policy measures, backed by the Tri-Party agreement between the unified government, the Federation of Labor and the industry employer organization, and the greater independence of the central bank, inflation expectations adjusted rapidly to the policy steps.¹¹

5 DISTRIBUTIVE EFFECTS OF INFLATION STABILIZATION: EXPLAINING THE KEY MECHANISM

Sargent (1999) argues that high inflation can be stopped quickly, and at a low cost. His argument is that inflationary expectations are quick to adjust when the economic regime shifts considerably. However, he ignores the fiscal burden and the income distribution that follow.

Monetary tightness has two main redistribution channels. First, monetary tightness reduce labor and profit earnings. The distribution of these gains is unlikely to be equal: some agents tend to lose dis-proportionately. This is the earnings heterogeneity channel of monetary policy. Second, unexpected inflation affecting real interest rate falls create a second, more subtle form of redistribution. Muth (1960) has shown that when a stochastic variable is composed of a random walk and a white noise process, none of which is ever observed separately, adaptive expectations are rational in the sense that they utilize all available information in an efficient manner. For brevity the paper refers to this residual uncertainty as the “permanent-transitory confusion”.

The implied distributed lags’ expectation process is applied to inflationary expectations around the 1985 Israel’s stabilization program by Cukierman et al. (2018).

What are the fiscal-monetary implications of deep-rooted inflation expectations, the unexpected inflation channel, before hyperinflation is stopped?¹²

¹¹This expectations-changing episode is akin to Volcker-policy effect on inflationary expectations in the US, see Sargent (1999).

¹²With the benefit of hindsight, it can be concluded that the 1985 cold turkey stabilization produced a large permanent drop in the rate of inflation. However, at the time of

Stopping hyperinflation has major distributive implications. This explains why a cross-party government, where each party represents different economic interests is often needed to enact credible sustainable policies. To understand the essentials of these matters, imagine a simple economy where there is a stock of public debt denominated in domestic currency, D .¹³ We denote one-period nominal interest rate by i . Then, the next-period full service of the government debt (i.e., principal plus interest) will be $(1 + i)D$. We choose the units of measurement so that the present price level is equal to one, and assume that the real interest rate is equal to zero. We also denote the one-period expected inflation rate, π^e , so that inclusive of the inflation premium, the nominal (gross) interest rate is $i = 1 + \pi^e$, and the next-period price level is equal to $1 + \pi^e$. If the government surprise market participants by setting the actual inflation rate equal to zero, so that the actual bond-return gross return is equal to one, the actual *real* burden of servicing the next-period debt is equal to:

$$(1 + \pi^e)D$$

On the other hand, if the government fulfills the private sector entrenched inflationary expectations and set the actual inflation equal to expected inflation, the *real* burden of the debt is just

$$D$$

Thus, the temptation not to stop inflation in its tracks may be irresistible.

Similarly, if the government surprises market participants by abrupt stopping of hyperinflation in the presence of entrenched inflation expectations, the fiscal burden of public sector wage bill and subsidies to basic food must rise. Therefore, the government may hesitate to do so.

To overcome this difficulty there must be a full-fledged social agreement between the government, savers (who hold government bonds), public sector wage earners, and recipients of food subsidies. To fix the inflated outlays on debt service, wage bill, and subsidies, some major

the stabilization, there was substantial uncertainty about the extent to which this dramatic drop would persist. The uncertainty was induced by wide gyrations in inflation and several failed attempts to stabilize prior to the 1985 successful stabilization. See Cukierman et al. (2018).

¹³See Calvo (1992).

redistribution of income must accompany the inflation-halting step. This is in essence the lesson from Israel's inflation stabilization policy.

6 BALANCE-OF-PAYMENTS CRISIS

Inflation crises are often intertwined with balance-of-payment crises. Budget deficits were the root cause of the balance-of-payment-cum—inflation crisis. The high-inflation period (1977–1985) comprised with prolonged balance-of-payments crisis. Large budget deficits make the inflation-employment tradeoff acute, under the regime of pegged exchange rate and liberalized international capital flows; the pre-stabilization regime in Israel. In order to maintain a pegged exchange rate and liberalized capital mobility, the central bank lost its ability to control the interest rate. Both inflation and unemployment ensued. The stabilization package resulted in a regime switch; the government effectively shifted the regime from the first goal of the tri-lemma to the second goal, while being able to sharply reduce budget deficits. Balance-of-payment crises occur when a country lift restrictions on capital mobility (in Israel it begun in 1977) without the consolidation its fiscal stance and regulatory institutions; especially those overseeing the financial intermediaries. If under these conditions the country is trying also to maintain a fixed exchange rate regime, it then unavoidably faces conflicting policy needs (such as fiscal imbalances, or a fragile financial sector) that need to be resolved by independent monetary policy.

Governments try to maintain certain financial and monetary arrangements, most notably a fixed-exchange rate regime. Their goal is to stabilize the economy. At times, these arrangements become unstable and collapse leading to financial crises. This strand of the literature analyzes currency crises characterized by a speculative attack on a fixed exchange-rate regime.

Currency crises occur when the country is trying to maintain a fixed exchange rate regime with capital mobility, but faces conflicting policy needs, such as fiscal imbalances or fragile financial sector, that need to be resolved by independent monetary policy, and effectively shift the regime from the first solution of the tri-lemma to the second solution.

Krugman (1979) describes a government attempting to maintain a fixed exchange rate regime. But, it is subject to a constant loss of reserves, due to the need to monetize persistent government budget deficits. These two features of the policy are inconsistent with each other, and lead to

an eventual attack on the international reserves of the central bank, that culminate in the collapse of the fixed exchange rate regime.

In what follows we provide a simple description of this model. Recall that the asset-side of the central bank's balance sheet at time t is composed of domestic assets $B_{H,t}$, and the domestic-currency value of foreign assets $S_t B_{F,t}$, where S_t denotes the exchange rate, i.e., the value of foreign currency in terms of domestic currency. The total assets have to equal the total liabilities of the central bank, which are, by definition, the monetary base, denoted by M_t .

Due to fiscal imbalances, the central bank domestic assets grow at a fixed and exogenous rate:

$$\frac{B_{H,t} - B_{H,t-1}}{B_{H,t-1}} = \mu$$

Because of perfect capital mobility, the domestic interest rate is determined through the interest rate parity, as follows:

$$1 + i_t = (1 + i_t^*) \frac{S_{t+1}}{S_t}$$

where i_t denotes the domestic interest rate at time t and i_t^* denotes the foreign interest rate at time t . Finally, the supply of money, i.e., the monetary base, has to be equal to the demand for money, which is denoted as $L(i_t)$, a decreasing function of the domestic interest rate.

The inconsistency between a fixed exchange rate regime, $S_t = S_{t+1} = \bar{S}$, with capital mobility and the fiscal imbalances comes due to the fact that domestic assets of the central bank keep growing, but total central bank assets cannot change since the monetary base is pinned down by the public at large demand for money, $L(i_t^*)$, which is anchored by the foreign interest rate. Hence, the obligation of the central bank to keep financing the fiscal needs, puts a downward pressure on the domestic interest rate, which, in turn, puts an upward pressure on the exchange rate. In order to prevent depreciation, the central bank has to intervene by reducing the inventory of foreign reserves. Overall, $\bar{S}B_{F,t}$ decreases by the same amount as $B_{H,t}$ increases, so the monetary base remains the same.

The problem is that this process cannot continue forever, since the reserves of foreign currency must have a lower bound. Eventually, the central bank will have to abandon the solution of the tri-lemma through a fixed exchange rate regime and perfect capital mobility to a solution for the tri-lemma through flexible exchange rate, with stabilizing monetary policy (i.e., flexible monetary base or equivalently domestic interest rate) and perfect capital mobility.

The question is this. What is the critical level of domestic assets $B_{H,T}$ and the corresponding period of time T , at which the fixed-exchange rate regime collapses? As pointed out by Flood and Garber (1984), this happens when the shadow exchange rate, defined as the flexible exchange rate under the assumption that the central bank's foreign reserves reached their lower bound while the central bank keeps increasing the domestic assets to accommodate the fiscal needs, is equal to the pegged exchange rate (Fig. 4).

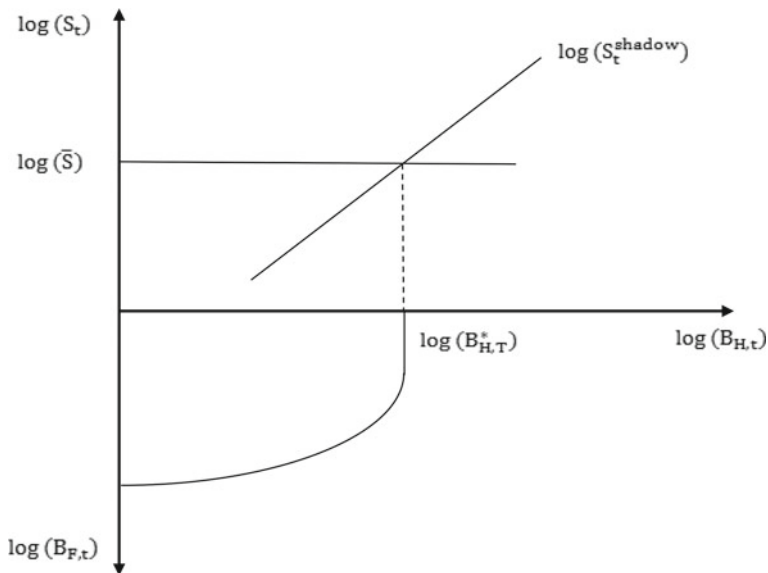


Fig. 4 Exchange rate and international reserves

The figure describes the critical value of central bank domestic assets where foreign assets are suddenly depleted and a switch to fully flexible exchange rate regime occurs.¹⁴

Some of the macroeconomic institutional changes, brought about by the inflation stabilization have lasted until these very days. The hyperinflation *cum* financial collapse episode has not reoccurred. Thanks to more disciplined monetary and fiscal policies, and well-regulated banks, the inflation rate converged to low rates, enjoyed by the advanced economies during the Great Moderation era.

In contrast, inflation stabilization programs adopted by other developing countries, especially in Latin America, proved not to have similar long-term durability. Argentine's stabilization program, relying on a rigid currency-board setup as its major pillar, was different. A lack of adequate budget discipline and importantly inadequate bank regulations, were some of the major weaknesses of the program. With a sovereign debt crisis and international capital flow reversal, "all hell broke loose". The abruptly collapsed currency board and the run on the banks created a severe liquidity shortage. Sovereign debt default ensued. The world had cut Argentina from the international capital market. More than 10 years later, prices are not stable. The country was able only recently to have better access to the international capital markets. Chile's stabilization program, however, had long-lasting outcomes, similarly to the Israeli program.

In contrast to the crisis-management experience in Latin America, the Asian crisis has been a game changing event that put the Asian Economies (particularly South Korea and Indonesia) on a durable growth track. To a large measure, the post-crisis Asian financial and monetary institutions restructuring enabled the entire region to escape the 2008 global crisis.

7 DISINFLATION AND GLOBALIZATION

The globalization wave has swept emerging markets in Latin America, European transition economies, East Asian emerging economies, and Israel, over the last decades. The 1992 single-market reform in Europe and the formation of the euro zone were watersheds of globalization. Emerging markets, including China and India, likewise became significantly more open. Kersting and Wynne (2007) note that in the 1970s

¹⁴Appendix describes alternative currency-crisis mechanisms.

more than three quarters of industrial countries had restrictions of some sort on international financial transactions. By the 2000s, none did. Likewise, restrictions on these transactions among emerging markets fell from 78% in the 1970s to 58% in the 2000s. Israel was exposed intensively in the globalization forces and was able to exploit them to climb down from three-digit inflation rates in the early 1980s, and the double-digit rates in the late 1980s and early 1990s.

The “Great Moderation” refers to the significant decline in business-cycle volatility starting in the mid-1980s, believed at that time to be permanent, in developed nations in the later part of the twentieth century. Sometime during the mid-1980s major economic variables such as real GDP growth, industrial production, monthly payroll, and the unemployment rate began to decline in volatility. These reductions are primarily due to greater independence of the central banks from political and financial influences which has allowed them to follow macroeconomic stabilization.

Figure 5 describes deviations from trend of the unemployment rate and the bond-yield corporate-treasury spread, for the period 1953–2014. The figure highlights the significant reduction in the fluctuations of the unemployment rate and the bond-yield spread between Baa corporation rates and the treasury rate.

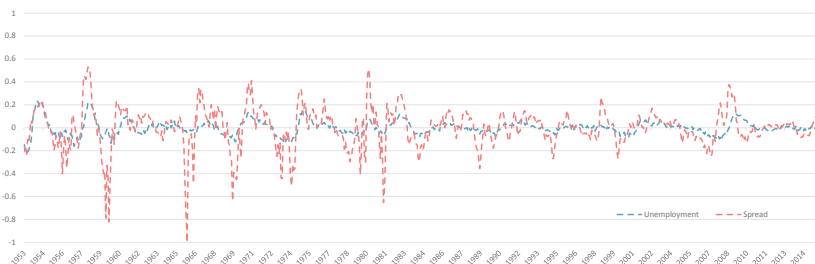


Fig. 5 HP filter de-trended unemployment rate and 5-year bond-yield (corporate/treasury) spread, US, 1953–2014 (*Source* FRED, BLS, FRED, BLS, an extension to Eckstein, Setty and Weiss [2015]. *Notes* De-trended unemployment rate obtains through HP-filter, in SD. Bond yield spread is defined as the difference between two things: 5-year treasury constant maturity rate, and moody’s seasoned baa corporate bond yield, HP filtered, in SD)

Global inflation declined from 30 to 4% between 1993 and 2003.¹⁵ Rogoff (2003, 2004) conjectures that globalization—interacting with deregulation and privatization—has played a strong supporting role in the past decade’s disinflation. An important feature of openness relates to international labor flows. International migrants constituted 2.9% of the world population in the 2000s, up from 2.1% in 1975. In some countries, changes have been more dramatic. In Israel in the 1990s, there was a surge of immigrants of up to 17% of the population, and the central bank achieved a sizable decline of inflation. It is possible that the two events are related. In Spain in 1995, the percentages of foreigners in the population and in the labor force were below 1% and below 0.5%. At the end of 2006, these rates were around 9 and 14%.

By easing labor bottlenecks, migrants help to keep down prices of goods and services. Pass through of world low inflation, and low interest rates, to domestic prices and interest rates, the effects of migration on wages, is to be addressed by the standard Phillips curve analysis.¹⁶

8 FLATTENING OF THE PHILLIPS CURVE AND GLOBALIZATION

The core mechanism in the New Keynesian paradigm depends on the Phillips Curve; that is, the tradeoff between surprise inflation and the level of economic activity. The reason why the New Keynesian framework is capable of generating such a trade-off between inflation and economic activity is that producer-desired prices (once prices are adjusted) rise with the economy’s output, when marginal costs slope upward due to diminishing returns to scale. Furthermore, when the labor supply increases, workers tend to experience increasing marginal disutility of labor efforts. The resulting increased real-wage demands must rise. Increased wage demands put an upward pressure on the marginal cost, and consequently on the producer-desired price setting.

Bean (2006) succinctly summarizes the effect of globalization on the Phillips curve in the era of globalization:

¹⁵ Kenneth Rogoff’s paper was prepared for the Federal Reserve Bank of Kansas City conference on “Monetary Policy and Uncertainty: Adapting to a Changing Economy” Jackson Hole, WY, August 29, 2003.

¹⁶ Bentolila et al. (2008) have addressed the impact of the Spanish immigration boom on the Phillips curve.

One of the most notable developments of the past decade (that is, the 1990s) has been the apparent flattening of the short-run trade-off between inflation and activity. The seventies were characterized by an almost vertical relationship in the United Kingdom, in which attempt to hold unemployment below its natural rate resulted in rising inflation. In the eighties, the downward sloping relationship reappears, as inflation was squeezed out of the system by the slack of the economy. However, since the early nineties, the relationship looks to have been rather flat. Three factors—increased specialization; the intensification of product market competition; and the impact of that intensified competition and migration on the behavior of wages—should all work to flatten the short-run trade-off between inflation and domestic activity.¹⁷

Independence of central banks is a way to overcome dynamic inconsistency: Expected inflation leads to output, employment, and financial-market distortions; surprise inflation is employment and output boosting (through the Phillips Curve mechanism). In the absence of central bank independence, the non-commitment equilibrium is one of high-expected inflation. Central bank independence is a necessary condition for overcoming the dynamic inconsistency and consequently weakening the inflation bias. Accordingly, Rogoff (2003, 2004) attributes the moderation in world inflation to a broad-based move towards having them run by conservative anti-inflation oriented central bankers; similar developments happened also in Israel. The increased competitiveness was a result of the interplay of globalization, deregulation and a decreased role for governments in many economies. Given this diagnosis he foresaw continued disinflation and even deflationary pressures (which came into a stark relief in the Great Recession) arguing that the most important factor supporting world-wide disinflation has been the mutually reinforcing mix of goods market and financial deregulation and globalization, and the consequent significant reduction in monopoly pricing power. These developments increased competitiveness. Diminishing the gains, a central bank can reap via unanticipated inflation, because it reduces the gap between

¹⁷ Similarly, Mishkin (2007) writes about the U.S. inflation-output trade-off: “The finding that inflation is less responsive to the unemployment gap, suggests that fluctuations in resource utilization will have smaller implications for inflation than used to be the case. From the point of view of policy makers, this development is a two-edged sword: On the plus side, it implies that an overheating economy will tend to generate a smaller increase in inflation. On the negative side, however, a flatter Phillips curve also implies that a given increase in inflation will be more costly to wring out of the system.”

the economy's monopolistically competitive equilibrium, and the more socially desirable competitive equilibrium. In addition, both theory and empirics suggest that economies that are more competitive have more flexible nominal prices, making smaller the Barro-Gordon-type output gain the central bank can achieve by inflating; and making them more ephemeral. In a standard, stylized political economy model, Rogoff shows that it is easier to credibly sustain low inflation in a competitive than in a highly monopolistic economy.¹⁸

Evidence of the effect of globalization on the Phillips curve is provided by Loungani, Razin, and Yuen (2001), Loungani et al (2002), and Clarida (2008). Previously, Romer (1993, 1998) and Lane (1997) showed that inflation and trade liberalization are negatively (significantly) correlated among the large (flexible exchange rate) OECD economies.

Evidently, changes in the foreign price pass through into domestic inflation in the open-economy case even if the exchange rate depreciation trend does not change. If, in addition, the exchange rate depreciation tapers down, and once the foreign exporters to the home country are also given a chance to adjust prices in response to the moderation in the exchange rate depreciation, the home country import price inflation moderates as well. In the world of the Great Moderation the home country inflation abates.

Opening up of the economy to capital, goods, and labor mobility also flattens the Phillips curve. In the New Keynesian framework, Binyamini and Razin (2008) show how increased volume of trade in goods, greater financial openness, and labor migration affect the trade-off between output and inflation by flattening the Phillips curve.¹⁹ Minimizing the (utility-based) loss function implies moderate inflation, akin to the Great Moderation. They demonstrate analytically how the opening up of the domestic economy to trade in goods, international borrowing and lending and migration flatten the Phillips Curve (see Appendix). Every successive round of the opening up of the economy contributes to flatten the aggregate supply curve. The intuition is that when an economy opens up to trade in goods, it tends to specialize in production but to diversify in consumption. This means the number of domestically produced goods, is

¹⁸Rogoff's prediction has proven correct. Global inflation moved sideways also after 2003, and then fell sharply asymptotically, approaching zero after 2008, despite massive monetary and credit expansion in the United States and the European Union.

¹⁹See Appendix 2.

less than the number of domestically consumed goods. Consequently, the commodity composition of the consumption and output baskets, which are identical if the trade account is closed, are different when trade in goods is possible. As a result, the correlation between fluctuations in output and in consumption (which is equal to unity in the case of a closed trade account) is less than unity if the economy opens up to international trade in goods. The decomposition of utility based Phillips Curve to the various forces of migration, output gap, and real exchange rate is shown in an Appendix. In words, these globalization forces work analytically as follows.

When the capital account is open, then the correlation between fluctuations in consumption and domestic output is further weakened, this is because with open capital accounts the representative household can smooth consumption through international borrowing and lending and thereby separate current consumption from current output. The inflation effects of shocks to the marginal cost are therefore reduced, because the fluctuations in labor supply are also smoothed, because of the consumption smoothing.

When the labor market is internationally closed to outward-migration, wage demands faced by domestic producers are upward sloping, both under in-migration and under a completely closed labor market. However, when the labor market is open to in-migration, domestic producers face an expanded labor supply: additional to the skilled native-born labor supply (with upward sloping wage demand), they also face a complementary unskilled foreign labor supply (with exogenously determined wage demand). That means that in-migration acts on the Phillips Curve essentially like a domestic productivity shock.

There has been some evidence of greater restraints on domestic prices and wage growth in sectors more exposed to international competition, such as textiles and electronics. Chen et al. (2004) analyzed disaggregated data for EU manufacturing over the period 1988–2000. They find that increased openness lowers prices by reducing markups and by raising productivity. This finding implies a downward shift of the Philips Curve. In response to an increase in openness, markups show a steep short-run decline, which partly reverses later, while productivity rises in a manner that increases over time. If globalization reduces the markup, our model

predicts that this effect, by itself, leads to a more forceful anti-inflation policy and lessens the attention given by the policy maker to the fluctuations in economic activity. One can conjecture that more frequent price updating steepens the trade-off between inflation and activity; however, to our knowledge, neither theory nor empirical evidence exists in support of any systematic relationship between globalization and frequency of price updating. Notably, Gopinath and Rigobon (2007) report that the time frequency of price adjustment of U.S. imported goods trended downward, on average, during the Great Moderation. Gopinath and Itskhoky (2008) exploit the open economy environment, which provides a well-identified cost shock; namely sizeable exchange rate shocks. They use this identification method to test the effects of price-adjustment frequencies and pass through. They demonstrate that high frequency adjusters have a long-run pass-through that is at least twice as high as low frequency adjusters in the data are. Borio and Filardo (2007) present cross-country evidence in support of their contention that global factors have recently become empirically more relevant for domestic inflation determination.²⁰

9 INTERNAQTIONAL CONVERGENCE OF INFLATION

Globalization—interacting with deregulation and privatization—has played a strong supporting role in Israel’s disinflation. The moderation is due, to a large extent, to the increasing independence of the Bank

²⁰See Binyamini and Razin (2008). See also Gali (2008) for a comprehensive treatise of the open-economy New Keynesian model. Borio and Filardo (2007) present cross-country evidence in support of their contention that global factors have recently become empirically more relevant for domestic inflation determination. But Ihrig et al. (2007) have shown that their result is very specific to the econometric method used. Based on cross-country analysis, Badinger (2007) finds that globalization is also correlated with more aggressive policy toward inflation. Tetlow and Ironside (2007), although not dealing with globalization, find that for the United States, the slope of the Phillips curve has—largely and continuously—lessened during recent years. However, Ihrig et al. (2007) have shown that results are very specific to the econometric method used. Based on cross-country analysis, Badinger (2007) finds that globalization is also correlated with more aggressive policy toward inflation. Tetlow and Ironside (2007), although not dealing with globalization, find that for the United States, the slope of the Phillips curve has—largely and continuously—lessened during recent years.

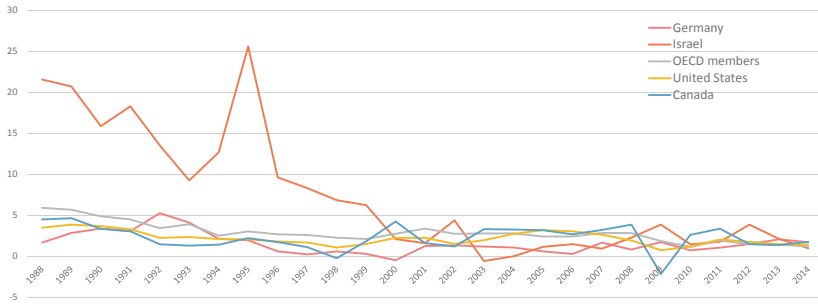


Fig. 6 Inflation rates (annual GDP deflator, percentage) (Source The World Bank)

of Israel, conducting effective anti-inflation policies in the presence of worldwide dis-inflation.²¹

Figure 6 shows the convergence of Israel inflation rate to US, Germany and OECD rates. Inflation fall started after the 1985 inflation stabilization policy but converged to the low one-digit rates of advanced economies in the 1990s.²²

The absence of constraining rules on actions of the Bank of Israel and on Israel's fiscal authority has induced strongly accommodative monetary policies and uncontrolled inflation. With improper financial sector regulation (e.g., the so-called "*Visut Menayot*") banks were on the verge of collapsing in the 1984 crisis. They were able to recapitalize making their investment portfolios less risky over the next two decades, thanks to more rigorous bank regulations.

²¹ Globalization affected also conduct of central banks. Inflation targeting was born in New Zealand in 1990. Admired for its transparency and accountability, it achieved success there, and soon in Canada, Australia, the UK, Sweden and Israel. It subsequently became popular as well in Latin America (Brazil, Chile, Mexico, Colombia, and Peru) and in other developing countries (South Africa, South Korea, Indonesia, Thailand and Turkey, among others).

²² Leiderman (1999) comprehensively analyze Israel's dis-inflation with a focus on monetary policies related to inflation and disinflation in Israel. He especially focus on inflation targeting as an instrument of disinflation.

10 DEPRESSION-DEFLATION RESISTANCE

Israel's resilience to the external financial shock during the global crisis is rooted in (a) the absence of credit boom in the wake of the crisis, and (b) the relatively small commercial banks' exposure in terms of toxic assets that for the European countries played a major role.

The newly emerging macroeconomic paradigm spans the gamut from an analytical framework that features full capital-market arbitrage, smooth credit, Ricardian-equivalence properties, representative agents, and efficient monetary management, to a framework with multiple agents, incorporating debt frictions, liquidity traps, and relatively ineffective monetary management and provides a role for fiscal policy in aggregate demand management. The analytical framework, based on the frictionless paradigm, captures well the role of globalization forces and the reduction in inflation in the 1990s Great Moderation era. The multiple-agent, market-friction revised analytical framework captures some key features of the Great Recession that occurred in the aftermath of the 2008 global financial crisis. It gives insight about the macroeconomic effects of debt overhang on economic activity and inflation, when the monetary policy rate reaches its lower bound.

The concern at the time was that Israel, being well integrated into the world markets and the world finance, might suffer contagion that will be long lasting. At the end of the day, Israel suffered only a temporary trade shock because of the decline in world demand.

As shown in Fig. 7, Israel did not have a significant credit boom in the wake of the 2008 crisis. The US and the UK, in contrast, were vulnerable to a gigantic credit expansion (Germany, as if Israel escaped such credit bubbles).

Nevertheless, GDP growth has averaged 4% over the 2005–2010 period years, compared with 0.7% on average for OECD countries. The overall living standards continue to improve gradually, with per capita real GDP growing more rapidly than in other OECD countries. The economy's resilience has been underpinned by solid economic fundamentals, including large foreign reserves, a dynamic high tech export sector, and the absence of economy wide deleveraging pressures leading to the downfall in economic activity. Because, Israel did not have a credit bubble in the years preceding the global financial crash, like the other major advanced economies, which burst during the financial crisis.

Israel's growth performance depicted in Fig. 8, during and after the

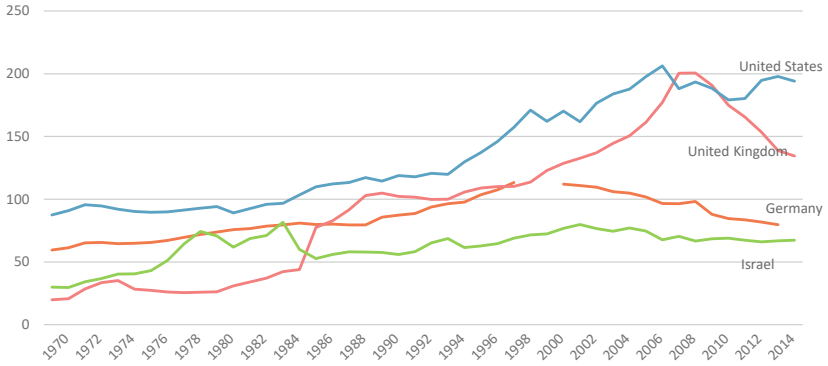


Fig. 7 Domestic credit to private non-financial sector (% of GDP) (*Source* International Monetary Fund, International Financial Statistics, data files, and World Bank and OECD GDP estimates. *Note* Domestic credit provided by the financial sector includes all credit to various sectors on a gross basis, with the exception of credit to the central government, which is net. The financial sector includes monetary authorities and deposit money banks, as well as other financial corporations where data are available [including corporations that do not accept transferable deposits but do incur such liabilities as time and savings deposits]. Examples of other financial corporations are finance and leasing companies, moneylenders, insurance corporations, pension funds, and foreign exchange companies)

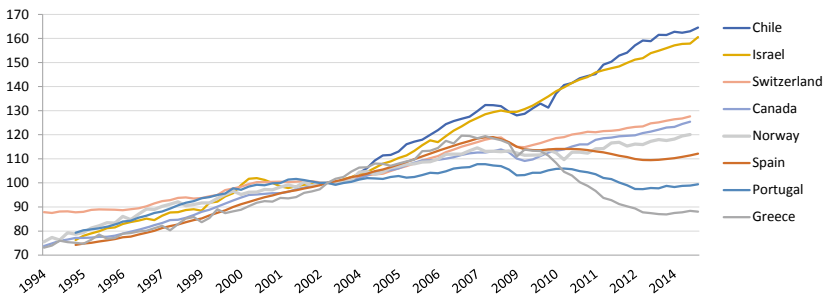


Fig. 8 Real GDP, Israel and selected countries (January 2003 = 100) (*Source* FRED)

global crisis, however, was not unique. Figure 3 in Chapter 3 shows that among similar small open economies Israel's GDP grew over the recent 20 years, including the 2008–2010 period at a similar cumulative rate as Chile; but at a much higher rate than Greece, Spain and Portugal; which had a financial sector crash.

Furthermore, Fig. 9 depicts GNP levels for Israel, Turkey, Brazil and Canada; economies, which spared financial, sector crash. Israel exhibits a more moderate drop of output than all these countries.

Capital flows provide another measure of the resilience of the Israeli Economy to the shocks. In the aftermath of the global financial crisis, expansionary monetary policy in advanced economies conventional or unconventional, that were conducted to boost up the economy, has affected emerging market economies and others, such as Israel, through four channels: capital inflows; exchange rate appreciation; reduced exports; and, effects of capital inflows on the domestic financial system.

A number of studies have found an effect of monetary policy on specific gross flows. Bruno and Shin (2015) for example, using a VAR methodology over the pre-crisis period (1995:4 to 2007:4) find an effect of the federal funds rate on cross-border bank to bank flows; the effect is however barely significant. Fratzscher et al. (2013), using daily data on portfolio equity and bond flows, find significant effects of different monetary policy announcements and actions since the beginning of the crisis.

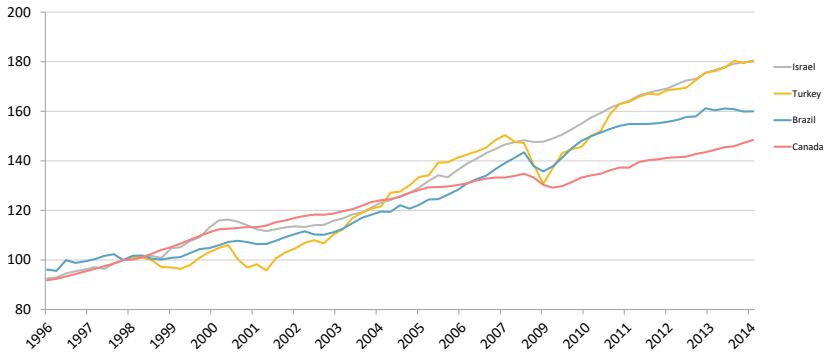


Fig. 9 Real GNP, countries with no financial crisis (January 1998 = 100) (Source FRED)

Their results however point to the complexity of the effects of apparently largely similar monetary measures. For example, they find QE1 announcements decreased bond flows to EMs, while QE2 announcements increased them. In terms of the equations above, this suggests that, in each case, monetary policy worked partly through its effects on the risk premium. These studies cannot settle the further issue of whether or not total gross inflows increase with advanced economies monetary expansions: The increase in the inflows the researchers have identified may be offset by a decrease in other inflows.²³ However, studies of total inflows, or of the set of inflows adding up to total inflows, yield some mixed conclusions. A representative and careful paper, by Cerutti et al. (2017), using quarterly flows over 2001:2 to 2013:2, suggests two main conclusions. The most significant observable variable in explaining flows into Emerging Markets (EMs) is the VIX index²⁴: An increase in the VIX leads to a decrease in inflows to EMs. The coefficients on the monetary policy variables, namely the expected change in the policy rate and the slope of the yield curve, typically have the expected sign. Several studies found that movements in the VIX are strongly associated with global capital flows.²⁵

It is worth looking now at capital inflows to EMs and Israel from the US, the epicenter of the global financial crisis, and the country, which adapted with virtually no lag a brief expansionary fiscal policy and a persistent expansionary monetary policy.

Figure 10 describes the portfolio capital outflows from the US to selected countries. Israel is in the middle of the pack of countries that enjoy inflow of portfolio capital investments in the aftermath of the 2008 global financial crisis. These inflows put appreciation pressures on the exchange rates. Some central banks, including BOI, conducted a policy of a massive purchase of foreign currency denominated assets, to protect against the declining competitiveness in the world trade.

Figure 10 describes the nominal exchange rate of various countries that engaged in the “currency war” period: Israel, Sweden, Switzerland,

²³See Blanchard (2016) who surveyed the literature about post 2008 crisis in advanced economies and emerging economies that were hit to different degrees by the global financial crisis. To a large extent, the emerging markets escaped the brunt of the crisis. Israel evidently belongs to the second group.

²⁴The VIX is the Chicago Board Options Exchange Market Volatility Index. It is a measure of the implied volatility of S7P 500 index options.

²⁵See Rey (2015).

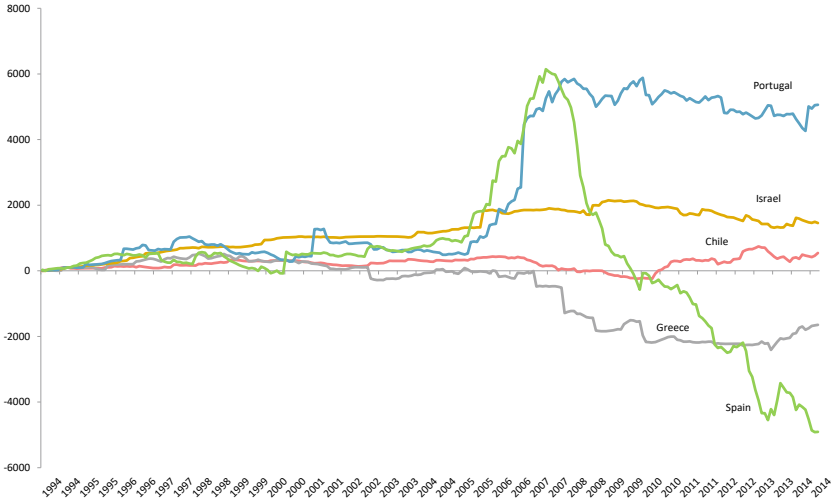


Fig. 10 Portfolio flows, crisis economies (index, December 1994 = 100) (*Source* Anusha Chari)

Brazil and Indonesia. Israel seems to have undervalued its currency the least among these countries; possibly because thanks for its international financial integration and almost no capital controls, the effectiveness of sterilized intervention was weak.

How did the Israeli policy makers react to the 2008 world financial-depression, and global trade-diminishing shocks? Policy makers' concern was threefold: First, banks exposures to toxic assets such as mortgage based securities and foreigners' debt obligations. Partly because Israel skipped the credit bubble, and bank regulations were relatively tight, Israel showed a sound resilience to the global financial shock. Second, Israel export markets softened and demand conditions deteriorated. Third, Israel domestic currency was strengthened. Bank of Israel addressed the last two issues by a massive foreign exchange market intervention to weaken the value of the domestic currency, and stimulate exports.

In the aftermath of the global financial crisis, expansionary monetary policy in advanced economies' conventional or unconventional, that were conducted to boost up the economy, has appreciated the currencies of the emerging market economies, including Israel. The question for these

economies was whether an expansionary monetary policy, which tends to depreciate the currency and boost exports requires a direct foreign exchange market intervention, or whether the latter can succeed without the former.²⁶

Israel monetary authorities were concerned about the “Great Recession” downward pressures on the demand for Israel’s exports and the strengthening of the Israeli currency as capital inflows rose. They engaged in an intensive (sterilized) intervention in the foreign exchange market to prevent the appreciation of the currency. However, there is evidently limits to how much such policy can stimulate the demand for Israel’s output.

Sterilized intervention is ineffective when there is high private capital mobility to the extent that domestic and foreign securities viewed by a large group of investors, are close substitutes. Conditions under which sterilized intervention is effective happen to exist for a crisis economy, however, when there is a probability of capital flow reversal, liquidity shortage, or major real trade shock, leading to financial-intermediaries collapse (see Appendix 5B). Under conditions where foreign and domestic assets are close substitutes, sterilized intervention is ineffective. Through a central-bank sale of domestic government debt assets, following a purchase of foreign currency in the foreign exchange market, the money supply fully adjusts to bring back the pre-intervention expected rates of return on domestic and foreign currency bonds into equilibrium (the standard interest parity). Sterilized foreign-exchange-market intervention, by the monetary authorities, where the domestic money supply is unchanged, is incapable of pushing the exchange rate up or down. However, the proposition may change in the presence of imperfect asset substitutability, where domestic and foreign bonds command a different liquidity premium and risk premium. Changing the composition of central bank assets, between foreign and domestic assets (the case of sterilized foreign exchange rate market interventions), can then have

²⁶In the presence of trending capital exports, the central bank cannot persistently appreciate the domestic currency by selling foreign exchange denominated assets in the foreign exchange market, because depleted international reserves could quickly reach their lower bound. However, In the presence of trending financial capital imports, the central bank can persistently depreciate the domestic currency by purchasing foreign exchange denominated assets in the foreign exchange market through money issue. This is why the foreign exchange market intervention is referred to as a “half instrument” in the hands of the central bank.

real economic effects in the presence of credit market spreads and frictions. In this case, sterilized foreign-exchange-market intervention could effectively change the value of the foreign currency in terms of domestic currency. A sterilized purchase of foreign assets may change the liquidity premium that domestic bonds command, relative to foreign bonds, even though the money supply is left unchanged. A similar outcome may transpire when foreign exchange intervention changes market views of future foreign-exchange-market interventions. Similarly, liquidity-based imperfect asset substitution between domestic government and domestic private-sector bonds during liquidity crises can be exploited by the central bank.²⁷ Israel's foreign exchange market half-decade episode started when credit frictions were relatively intensive following the Lehman moment in the USA in October 2008.

Recall that the most significant observable variable in explaining short-term flows into Emerging Markets (EMs) is the VIX index: An increase in the VIX leads to a decrease in inflows to EMs. The VIX index is directly related to the risk adjusted return on domestic government bonds in the periphery countries, like Israel. Sterilized foreign-exchange market purchase of US government bonds by the central bank is then capable of blocking exchange rate appreciation. This was the rationale for the Bank of Israel policy in the aftermath of the global financial crisis. However, the effectiveness of such policy is short lived. Once the VIX index falls, sterilized-foreign-exchange-market intervention becomes ineffective. Excessively high foreign reserves also have fiscal medium term costs.²⁸

²⁷ See Krugman et al. (2015).

²⁸ Sorezcky (2015) provides evidence on the effectiveness of the 2008–2009 strong intervention period and Ribon (2017) provides a broader overview of forex intervention over the entire global financial crisis. Cukierman (Forthcoming) compares the methods of interventions in Israel and Switzerland and their implications for forex reserve accumulation. Another reason for the tameness of inflation despite massive base expansion in the US since 2008 is that this expansion was in response to a huge increase in the demand for liquidity on the part of banks and the entire financial sector rather than to a governmental craving for seignorage revenues. Cukierman (2017) demonstrates and argues that this is very different than the base expansion in post WWI Germany in which the main motive for base expansion was seignorage for government.

11 CONCLUSION

Historical patterns of booms and busts typically exhibit frequent small recessions interrupted by rare but deep and long recessions. Traditional macroeconomic models, used often by central banks and many other policy-making institutions, do not capture the full features of crises: frequent small recessions punctuated by rare depressions. They do not illuminate how small open economies, like Israel, which are substantially integrated into the world economy, perform when a global financial shock takes place, leading to recession as deep and persistent as the Great Recession. We discussed the relatively robust performance of Israel (as well as some other advanced economies (e.g., Canada), and major Emerging Markets in the aftermath of the 2008 global financial crisis. Factors contributing to this robustness are the absence of credit and real estate bubbles, and banks' tight regulation in the wake of the crisis, which precluded the deleveraging process following the financial crisis.

The state of Israel, founded in 1948, benefited immensely from the post-1945 globalization wave. Steadily reforming its financial and commercial institutions, and becoming increasingly globalized in trade, labor market, and finance, Israel became a member of the OECD; the accession took place in 2010. Currently, Israel's is a thriving economy, integrated tightly into the world economy, Israel also feature a remarkable technological prowess. The Israeli economy is a remarkable development success story. A middle-income economy in the midst of a hyperinflation in the early 1980s, Israel grew into one of the most thriving economies in the world: and this despite the ongoing security challenges, that are most certainly a drain on its resources.

Fiscal policy has been recently given greater emphasis in the post-2008 crisis that nominal interest rates appear to be persistently low—and below the annual growth rate of nominal GDP. This recent phenomenon generated renewed debate on the role of “printing money” in financing government deficits. Modern Monetary Theory, or MMT, argues that a country borrowing in its own currency can finance fiscal stimulus by printing money. That is, governments able to issue fiat money can't go bankrupt, regardless whether investors are willing to buy their bonds. By extension, MMT would allow the government to control inflation through tax policy. Instead of asking the Fed to stabilize prices through monetary policy, the government could raise taxes when prices get too

high and cut taxes when prices get too low. However, basic macroeconomics wisdom suggests that deficit finance by money issue won't leave banks sitting idle on their newly acquired reserves; they'll convert them into currency, which they lend to individuals. So the government indeed ends up financing itself by printing money, getting the private sector to accept pieces of paper in return for goods and services, and this would lead to inflation. Recall that a deficit financed by money issue is more inflationary than a deficit financed by bond issue. When the central bank purchases a government bond in the open market in exchange for commercial bank reserves, all it does is substitute a very short-term liability (reserves have zero maturity) for a longer-term liability. That is, a central bank purchase of government bonds simply alters the maturity structure of the consolidated government's liabilities, and thereby pushing up inflationary pressures.

Recently, there has been extensive analysis of changes in the Phillips curve in Israel. Elkayam and Ilek (2016), gave evidence that between 2003 and 2013 there was a substantial reduction in the Israeli natural (or NAIRU) rate of unemployment. Such a development likely contributed to the maintenance of the 2% inflation target in spite of substantial decreases in unemployment. Another important development that, most likely shifted the Israeli Phillips curve to the left are the fiscal reforms of the early twenty first century that mandated a long term gradual reduction in national debt and the imposition of a 3% ceiling on public deficits. As argued by Braude and Flug (2012) and others those policies created a fiscal policy space that could be used later to moderate the deflationary impact of the GFC on the Israeli economy.

APPENDIX: GLOBALIZATION AND THE PHILLIPS CURVE

Binyamini and Razin (2008) show how trade in goods, financial openness, and labor in- and out-migration affect the trade-off between output and inflation by successively flattening the Phillips Curve. Let the range of the mass of domestically produced goods, n , is $(0,1)$ and that $\omega > \omega_p$.

In the case of *perfect mobility of labor, capital, and goods*, the log-linear approximate aggregate supply curve (Phillips Curve) is given by²⁹:

$$\begin{aligned} \widehat{\pi}_t = & \kappa \cdot \left[\frac{\omega_p \cdot n}{1 + \omega_p \theta} \cdot x_t + \frac{\omega_p \cdot (1 - n)}{1 + \omega_p \theta} \cdot \left(\widehat{Y}_t^F - \widehat{Y}_t^N \right) \right. \\ & + \frac{1}{1 + \omega_p \theta} \cdot \widehat{w}_t^W + \frac{(1 - n)}{n} \cdot \widehat{q}_t \left. \right] + \frac{(1 - n)}{n} \cdot \left(\widehat{q}_t - \widehat{q}_{t-1} \right) \\ & + \beta \cdot E_t \left[\widehat{\pi}_{t+1} - \frac{(1 - n)}{n} \left(\widehat{q}_{t+1} - \widehat{q}_t \right) \right], \end{aligned}$$

where $\widehat{\pi}_t$ is the deviation of CPI inflation from its target; $x_t \equiv \left(\widehat{Y}_t^H - \widehat{Y}_t^N \right)$ is the domestic output gap; $\left(\widehat{Y}_t^F - \widehat{Y}_t^N \right)$ is the difference between foreign output and domestic natural output; the parameter ω_p is the elasticity of the marginal cost with respect to producer's output, θ is the intra industry elasticity of substitution, σ stands for the intertemporal elasticity of substitution, and β denotes the subjective discount factor. The term n denotes the mass (number) of domestically produced goods, w is domestic wage, and superscript F, N, and W, denotes Foreign, Natural and World variable, respectively.

The term $\kappa = \frac{(1-\alpha)(1-\alpha\beta)}{\alpha}$, captures the degree of price flexibility; and $(1-\alpha)$ is the probability of receiving a price-updating signal. The variable \widehat{q}_t is the real exchange rate, formally defined as:

$$\widehat{q}_t = \widehat{\varepsilon}_t + \widehat{P}_{F,t} - \widehat{P}_t$$

where, $\widehat{P}_{F,t}$ denotes the foreign consumer-price index.

Denote the slope of the Phillips equation by ψ ; for the open-economy expression slope of the aggregate supply, equation is $\psi_1 \equiv \frac{\kappa n \omega_p}{1 + \omega_p \theta}$.

Let us turn to the case of no labor mobility and no capital mobility. If the domestic economy is not integrated to the international financial market, then there is no possibility of consumption smoothing, and we have that the value of aggregate current spending equals the value of

²⁹See also Razin (2014), Chapter 11.

aggregate domestic output:

$$\hat{P}_{C,t} \hat{C}_t = \hat{P}_{Y,t} \hat{Y}_t; \quad \hat{P}_{C,t} \hat{C}_t^N = \hat{P}_{Y,t} \hat{Y}_t^N$$

where $\hat{P}_{C,t}$ the CPI-based price is level, and $\hat{P}_{Y,t}$ is the GDP deflator. In this case, the aggregate supply curve is

$$\begin{aligned} \hat{\pi}_t = \kappa \cdot & \left[\frac{(\omega \cdot n + \sigma)}{1 + \omega\theta} \cdot x_t + \frac{\omega \cdot (1 - n)}{1 + \omega\theta} \cdot \left(\hat{Y}_t^F - \hat{Y}_t^N \right) + \frac{(1 - n)}{n} \cdot \hat{q}_t \right] \\ & + \frac{(1 - n)}{n} \cdot (\hat{q}_t - \hat{q}_{t-1}) + \beta \cdot E_t \left[\hat{\pi}_{t+1} - \frac{(1 - n)}{n} (\hat{q}_{t+1} - \hat{q}_t) \right]. \end{aligned}$$

The Phillips-curve slope is:

$$\psi_2 \equiv \frac{\kappa(\omega n + \sigma)}{1 + \omega\theta}$$

In the *closed economy* case the aggregate supply equation (Phillips Curve) reduces to

$$\hat{\pi}_t = \frac{\kappa}{1 + \omega\theta} \cdot (\omega + \sigma) \cdot x_t + \beta E_t \hat{\pi}_{t+1}$$

In the case of the closed economy, the Phillips Curve slope is:

$$\psi_3 \equiv \frac{\kappa(\omega + \sigma)}{1 + \omega\theta} \geq \psi_2 \equiv \frac{\kappa(\omega n + \sigma)}{1 + \omega\theta} \geq \psi_1 \equiv \frac{\kappa n \omega_p}{1 + \omega_p \theta}$$

The Phillips curve is steeper in the closed economy case, compared to the open-trade case with no-labor, no-capital. The latter is steeper than the slope with perfect mobility of labor, capital, and goods. The model features a moderating impact of in-migration on wages.

Furthermore, changes in the foreign price pass through into domestic inflation in the open-economy case, but these effects are absent in the closed economy case. This observation validates the proposition the globalization in the world of great moderation exert inflation moderating influences.



Welfare State and Migration at Work: United States vs. European Union

On his travel to the US at the beginning of the nineteenth century Alexis De Tocqueville attributes the distinct nature of the US regime as related to individualism. He says: “a reflective and tranquil sentiment that disposes each citizen to cut himself off from the mass of his fellow men and withdraw into the circle of family and friends; so that, having created a little society for his own use, he gladly leaves the larger society to take care of itself. When citizens are forced to concern themselves with public affairs, they are inevitably drawn beyond the sphere of their individual interests, and from time to time, their attention is diverted from themselves. ... As soon as common affairs are dealt with in common, each man sees that he is not as independent of his fellow men as he initially imagined, and that in order to obtain their support, he must often lend them his cooperation.” At the time of De Tocqueville visit, the US welfare state was non-existent. Recently Angela Merkel claimed: “The European Union (EU) accounts for roughly 7 per cent of the world’s population and 25 per cent of its GDP, but over 50 per cent of its welfare spending.” The US welfare spending is only a fraction of the EU’s.

In a federal setting, lower-level jurisdictions (regions) are inevitably affected by policies introduced at the highest (federal) level. For example, if migrant workers pay local taxes, attractive regions will be ‘winners’ of any federal policy supporting the free movement of workers. Regions facing labor outflows will be ‘losers’. Migration has indeed widened

regional disparities (Goldin et al. 2018). Using net contributions of each member state to the overall EU budget, Daniele et al. (2020) cluster EU member states in three intuitive groups: main contributors, main recipients, and those in between. For instance, net transfers received from the EU represented 3.53% of GNI for Lithuania, 2.9% for Bulgaria, and 2.11% for Poland (in 2000–2015). The Netherlands and Germany were the main net contributors. They argue that the three clusters based on net transfers capture winning/losing perceptions of EU migration policies significantly. Eurosceptic parties do better in European than in national elections, but only in winning (receiving) or losing (contributing) member states.

Unlike the EU, the US federal system is a fiscal union. Consequently, inter-state conflicts concerning the federal migration policy are less pronounced.

In the following sections we analyze root causes of migration and redistribution policies differences between the EU and the US federal systems.

1 MIGRATION POLICY

A central tension faced by policy makers exists in countries that receive migrants from lower-wage countries. The former countries are typically highly productive and capital rich. The resulting high wages attract both highly-skilled and low-skilled migrants. Reinforcing this migration is the nature of the host country’s welfare state: low-skilled migrants find a generous welfare state particularly attractive. Such a welfare state may turn also to be a migration state. Low-skilled migration imposes a fiscal burden on the native-born. In addition, a generous welfare state may deter high-skilled migration because heavy redistributive taxes must perforce accompany them. Indeed, over the last half-century, Europe’s generous social benefits have encouraged a massive surge of “welfare migration”, that is, of low-skilled migrants. In contrast, at the same period, the US has attracted a major world portion of highly-skilled migrants, boosting its innovative edge. While in the last two decades Europe ended up with 85% of all low skilled migrants to developed countries, the US retains its innovative edge by attracting 55% of the world-educated migrants. European migration thus exhibits a bias towards low-skilled workers, whereas the US attracts the majority of the world’s skilled migrants. At the same time, the welfare system in Europe is more generous than that in the US. Whether the

group (union) of member states of a union competes or coordinates their policies has an impact on the skill composition of its migrants and the generosity of the welfare system.

The old generally benefit from the generosity of the welfare state (for example, the old-age social security benefits). They are also keen to admitting migrants, in particular highly-skilled migrants ones, as a way to of alleviating its overstretched finances of the welfare state. On the other hand, the working young, who finance the welfare state through payroll taxes, are reluctant to support a generous welfare state. This is because they may be concerned about changes in the political balance in the future when they grow old, which could endanger the old-age benefits they expect to receive. It is interesting to note in this context that the current immigration debate in the US about “the path to citizenship” of the undocumented migrants is centered exactly about on how they may tilt the political balance of power, once they become citizens, concerning the “role of government” (that is, the generosity of the welfare state).

It was migrants from Europe in nineteenth century that created the US (the New World). Naturally, migration to this new world was not restricted.¹ In the latter part of the twentieth century, however, the US tilted its migration policy, in favor of highly-skilled migrants; The 1990 US Immigration Act increased the number of temporary visas to highly-skilled workers. In addition, during those decades, the US universities and research centers—funded directly and indirectly by the US federal and state governments—attracted talented researchers from all over the

¹In 1790, US Congress stated that only free white people could become U.S. citizens. This was reversed in 1870, after the Civil War. In 1864, the Immigration Act encouraged immigration to address labor shortages caused by the Civil War. In 1882, the Chinese Exclusion Act prohibited the immigration of Chinese laborers; this was later expanded to most Asian countries. US Congress established national-origin quotas with the Immigration Act of 1924.³¹ It awarded immigration visas to just 2% of the total number of people of each nationality in the United States as of the 1890 national census. By 1970, the law had forced immigration down to a low of 4.7% of the population; reduced from a high of 14.7% in 1910. In 1965, the Immigration and Naturalization Act eliminated quotas based on nationality. Instead, it favored those with needed skills or who were joining families in the United States. In 1986, the Immigration Reform and Control Act legalized undocumented immigrants who met certain conditions. Today’s percentage of immigrants is similar to the late nineteenth century when almost 15% of U.S. residents were immigrants.

world. Many of them remained in the US after completing their original term of education, training or research. Many became citizens. By the mid-1990s, 30% of documented immigrants to the US were high-skill.

The birth of the welfare state in Europe took place in Bismarck's Germany, in the late nineteenth century. In the twentieth century, after the two world wars, most European countries—those, that later formed the European Union—demonstrated their own models of the welfare state. The reconstruction of continental Europe (Germany and France in particular) exhausted the native-born labor force. This induced continental Europe to invite guest workers from labor-rich countries in southern Europe, Turkey and North Africa. Exceptionally, France had introduced from the outset a legal immigration policy that permitted the settlement of immigrant workers and their families from its colonies in North Africa. Germany, at the other extreme, always attempted to maintain strict rotation policies aimed at its guest workers to prevent from settling in Germany; see Hollifield (2004). However, the post-war family reunification arrangements throughout the core European countries eventually turned the guest workers into residents, effectively, of their host countries. The removal of barriers to labor mobility within the Schengen Area took place at the same time of increased restrictions by the EU member countries on the immigration from outside the EU. Enabling them to retain their sovereignty over non-EU immigration policy. The collapse of the Soviet Bloc and the extension of the EU to include Central and East eastern European countries brought additional immigrants into the core- EU countries.

Overall, and dissimilar from the US, the European migration exhibited significant bias toward low-skill migrants; see Boeri, Hanson and McCormick (2002) and Boeri (2008). Table 1 compares the stocks of migrants, by educational attendance, between the EU-15 and the US. Indeed, it is clear that more than 40% of the stock of migrants in the US have undergone tertiary education, whereas the corresponding figure for the EU-15 is less than 25%. Similarly, about as many as 48–59% of the stock of migrants in the EU-15 have only primary education, whereas the corresponding figures for the US are only 22–26%.

Table 1 The stocks of migrants, by education-level, as percentages of the total for the EU-15 and the US and the EU-15, 1990 and 2000

<i>Education level (%)</i>	<i>EU-15</i>		<i>US</i>	
	1990	2000	1990	2000
Primary	59	48	26	22
Secondary	24	28	31	36
Tertiary	18	24	43	42
Total	100	100	100	100

Source International Organization for Migration (IOM) and OECD

In setting up a migration policy, the skill composition of immigrants is a crucial factor. Naturally, highly- skilled immigrants are more attractive to the destination countries than low skilled for a variety of reasons.²

There are significant differences in skill-based migration policies between the EU and the US. US migration policy has a strong high-skilled element. Launched as part of the Immigration Act of 1990, the H-1B visa program is intended to satisfy demand for workers with a bachelor's degree, or higher, in occupations that require specialized technical knowledge. The high-skilled visa program is effectively a path to US citizenship. Not to the same extent in the EU, except some outliers.³

2 AGEING

Ageing of the population is another fundamental factor, inter-related with migration and the generosity of the welfare state. In developed countries, the destination of migration from around the world, populations are ageing dramatically: in 2017, the world population aged 60 years or older was more than twice as large as in 1980, and two-thirds of the world's older persons lived in developed regions (United Nations 2019).

In 2010, the proportion of people aged 65 and older constituted 13.1% in the US, whereas in the core EU countries it was significantly larger: 20.8% in Germany, 20.3% in Italy, 16.8% in France, and 16.6% in

² See Chapter 2.

³ Various immigration schemes have been developed to attract highly skilled migrants from outside the European Union. The most common scheme is the Dutch highly skilled migrant programme (kennismigrant).

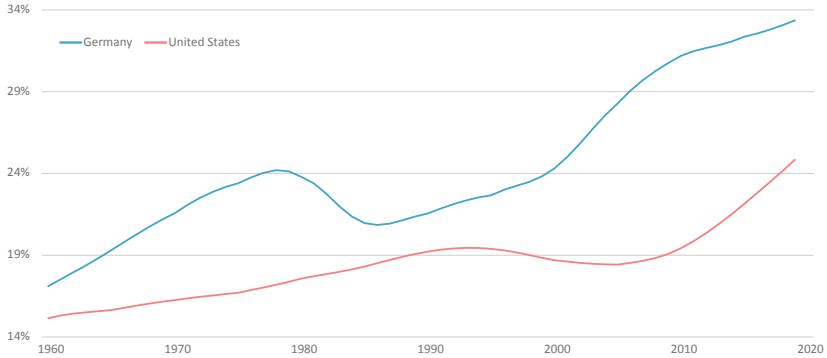


Fig. 1 Age dependency ratio, old (% of working-age population): Germany vs. United States (*Source* The World Bank)

the UK (United Nations, 2013). Although the population in the US is getting older, and its numbers are growing more slowly, than in the past, the demographic future for the US is younger than that of the core EU countries. In particular, the US population is projected to grow faster and age more slowly than the populations of its major economic partners in Europe. Figure 1 describes the ageing patterns of the US and Germany (the largest EU economy) in terms of the age dependency ratio.

Figure 2 (re-produced from Chapter 1) describes the effect of ageing (the share of elderly in the population) on the provision of social benefit; (a) if the government represent the high-income group and (b) if the government represents the low-income group.

In both cases ageing drives up provisions of social benefits, the measure of the welfare-state generosity. This helps explain, in part, why EU is more generous welfare state than the US.⁴

⁴For details, see how we model the effect of ageing on the generosity of the welfare state, in Chapter 2. To capture dependency on the social insurance through retirement, unemployment, disability, etc., we assume that there is an individual idiosyncratic shock. The probability of non-work realization is also the share of dependents in the population. Because migrants typically come in young and productive, the non-working shock does not apply to them. Autor (2020) describes the long lasting trend in the US of the decline in the share of working-age population.

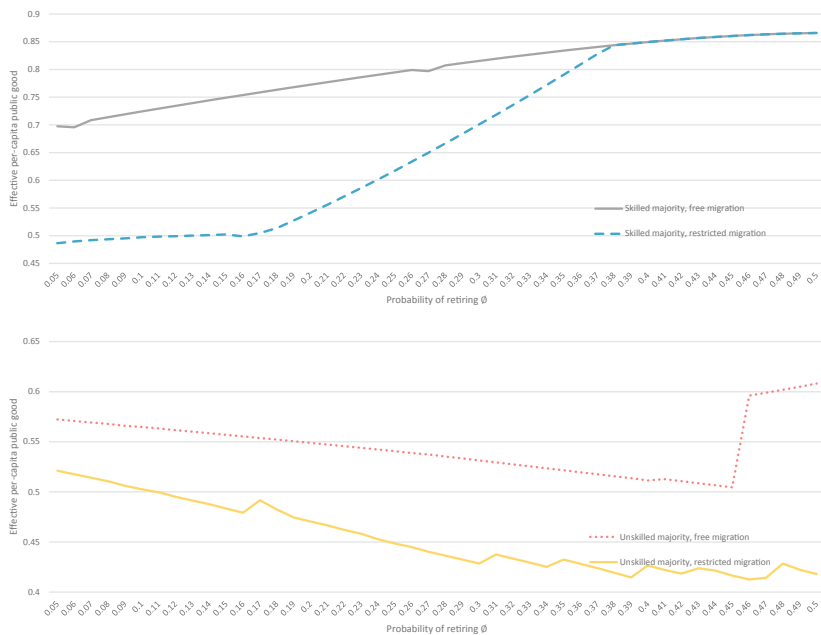


Fig. 2 Provision of social benefit: **a** High income government. **b** Low-income government (*Source* Simulations based on the model in Chapter 2 Appendix)

3 LABOR MOBILITY

There is also a significant difference degree of labor mobility between the EU and the US. The average response of the population to a local demand shock in Europe turns out to be much more limited and slower than in the US (Beyer and Smets 2015; Arpaia et al. 2016; Dao et al. 2016). Beyer and Smets (2015) compare the labor market response to region-specific shocks in Europe and the United States and to national shocks in Europe and investigate changes over time. They employ a multi-level factor model to decompose regional labor market variables and then estimate the dynamic response of the employment level, the employment rate and the participation rate using the region-specific variables and the country factors. They find that both in Europe and in the United States labor mobility accounts for about 50% of the long-run adjustment to

region-specific labor demand shocks and only a little more in the United States than in Europe, where adjustment takes twice as long. In Europe, labor mobility is a less important adjustment mechanism in response to country-specific labor demand shocks that cause stronger and more persistent reactions of the employment and the participation rate. However, they detect a convergence of the adjustment processes in Europe and the United States, reflecting both a fall in interstate migration in the United States and a rise in the role of migration in Europe.

4 FEDERAL WELFARE STATE: COORDINATION VS. COMPETITION AMONG STATES

The United States of America, since gaining independence over 200 years ago, organized its various states as a federation. The large expenditures incurred by the pre-independence States during the War of Independence, and the consequent inability of those individual states to repay the ensuing debts, triggered both the need and the opportunity to establish an integrated federal fiscal system. Congress then transferred the authority to levy taxes from the states to the federal government; which then bailed out the states and effectively assumed their debts. The 1790 Congress empowered the federal government to raise enough revenues to service the large government debt. Another wave of state fiscal crises in the mid of the nineteenth century strengthened the federal government's ability to take a leading role in financing infrastructure projects, allowing state governments to reduce their role. Following their debt crises, many states introduced some forms of balanced budget rules into their constitutions; see Sargent (2012); this increased the role of the federal government in the fiscal system. In the early twenty-first century, federal tax revenues constitute well over one-half of all the tax revenues (federal, state and local) in the US. In contrast, at the time the European Union was formed, all the major individual constituent countries have already had well-established solid fiscal systems, and none was at a risk of default. Therefore, the individual countries preserved their fiscal independence from the outset. Later on, treaties (such as the Maastricht Treaty of 1992) attempted to restrict the fiscal sovereignty of the individual countries. However, its restrictions applied merely to several aggregate variables, such as the budget deficit and the public debt. Each country was still free to set its total expenditure budgets and their compositions. This effectively means that each country

faced no restrictions on the level and composition of its social expenditures and taxes, key components of the welfare state. Furthermore, these treaties were not enforced, mostly because of the veto power granted to each country on important fiscal policies.

In contrast to the US, there are no EU-wide taxes or social programs in the EU—no EU-wide income tax, no health care programs (such as, in the US, Medicare, and Affordable Care) or social security payroll taxes in the EU. The EU social expenditures budget amounts to no more than 1% of the GDP. However, these expenditures are significantly lower in the US, relative to the core EU member states. For example, in year 2000, total social expenditures in 2000 amounted to USD 8,618 USD in Denmark, USD 7,583 USD in Germany, USD 8,040 USD in France, and USD 8,668 USD in Sweden, but only USD 5,838 USD in the US (Data: OECD library).

Figure 3 compares the EU 20 non-defense government spending in percents of GDP, with US's per GDP spending, over the years 1995–2018. EU spending significantly exceeds the US spending, year by year, indicating that the EU welfare state is overwhelmingly more generous.

Dolls et al. (2012) analyze the effectiveness of the tax and transfer systems in the EU and the US to provide income insurance through automatic stabilization after the Great Financial Crisis. They find that automatic stabilizers absorb 38% of a proportional income shock in the EU compared to 34% in the US.

A key difference between the EU and the US concerning the welfare-state generosity happens in the area of health care. The United States spends more per capita on healthcare than any other country in the

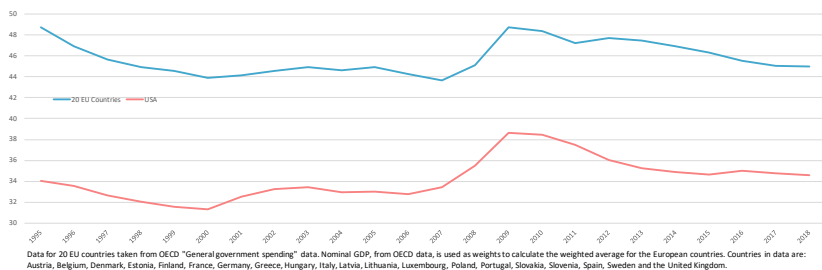


Fig. 3 General Government Expenditure as GDP%, without Defence (*Source* OECD)

world, amounting to about one-sixth of the country's economy. However, despite the high price tag, the United States is still the only wealthy, developed nation without universal health coverage. In contrast, the European countries pioneered in providing universal health care system.⁵

5 THE COORDINATION-COMPETITION FISCAL-EXTERNALITY HYPOTHESIS

Razin and Sadka (1991) presented a theoretical framework to demonstrate that, under certain assumptions (e.g. the “residence principle” of international taxation is optimally enforced by member states), there are no gains from tax coordination over the tax competition regime. However, the residence principle is not easily enforced and countries instead resort to source-based taxation of income from capital. In this situation, tax competition among countries, may lead to inefficiently low tax rates and welfare-state benefits because of three mutually reinforcing factors. First, in order to attract mobile factors or prevent their flight, tax rates on them are reduced. Second, the flight of mobile factors from relatively high tax to relatively low tax countries shrinks the tax base in the relatively high tax country. Third, the flight of the mobile factors from relatively high tax to relatively low tax is presumed to reduce the remuneration of the immobile factors, and, consequently, their contribution to the tax revenue. These reinforcing factors tend to reduce tax revenues and, consequently, the generosity of the welfare state, as demonstrated using

⁵Germany has the world's oldest national social health insurance system, with origins dating back to Otto von Bismarck's Sickness Insurance Law of 1883. Employers pay for half of their employees' health insurance contributions, while self-employed workers pay the entire contribution themselves. The vast majority of the German population is covered by a statutory health insurance plan, which provides a standardized level of coverage through any one of approximately 100 public sickness funds. The rest are covered by private health insurance. France has a system of health care largely financed by government through a system of national health insurance. Designed by William Beveridge, the United Kingdom's NHS was established in 1948, funded from general taxation and national insurance contributions paid by employees, employers and the self-employed. The Italian version of a National Health Service (Servizio Sanitario Nazionale) includes universal coverage and tax funding. Addressing the issue of why the U.S. doesn't have the generous welfare benefits of advanced countries in Europe, Alesina et al. (2001) note that U.S. institutions—the Senate, the electoral system, the legal system—were designed much earlier than their modern European equivalents, and are thus more oriented toward protecting private property. In addition, they find evidence that racial animosity was a source for opponents of redistribution in the United States.

calibration exercises of tax competition models in the presence of perfect capital mobility for the EU (see Bovenberg et al. 2003; Mendoza and Tesar 2005; Sorensen 2001). If, however, instead of considering capital mobility, one focuses on labor (of various skills) as the mobile factor, the tax competition leads to a non-conventional outcome. In a recent book (Razin and Sadka 2014), we build on Tiebout's (1956) framework of competition among localities. However, we allow for the total population in the host country and its skill distribution to be endogenously determined through migration of various skills. We find that in this context tax competition need not be efficient. With this result in mind, we then study the policies that ensue through coordination among the host countries and compare them to the competition policies.

Razin and Sadka (2014) compare the generosity in providing social benefits, and the policy-based share of skilled immigrants in total number of immigrants under the two regimes: US like fiscal-migration federal system and EU like union of fiscal and migration sovereign states. The model treats the host countries stylistically as members of federal states, with and without coordination of government budgets and migration policies. The rest of the world is the pool of would-be immigrants. We allow competition (through the tax-cum-transfer system) among the several host countries, treated as "perfect competitors". The rest of the world provides exogenously upward sloping supply curves of unskilled and skilled would-be migrants. We address the issue of whether tax competition among host countries is inefficient, relative to tax coordination, in the presence of migration from within—and outside—an economic union (see the Appendix for a general-equilibrium analysis of "fiscal externality").

The number of migrants of each skill type that wishes to emigrate rises with the level of utility they will enjoy in their host countries. A possible interpretation for this upward supply is that for each skill type the migration costs vary according to individual characteristics such as age, family size, portability of pensions, etc. This cost generates heterogeneity in reservation utilities and gives rise to an upward sloping supply of migrants. We assume that would-be migrants are indifferent with respect to the identity of the would-be host country—all they care about is the level of utility that they will enjoy. In equilibrium, the utility enjoyed by migrants of each skill type is the same in all host countries.

Main finding is that coordinating the fiscal and migration policies allows the union-member states to offer less generous social benefits than

when they compete with each other. The rationale for this result is rooted in a *fiscal externality* associated with migration. A union-member high-skilled native born has an infra-marginal gain from either high-skill or low-skill migration stemming from the diminishing productivity of either type of labor for a fixed stock of capital. The gain stems from the fact that each migrant (whether skilled or low skilled) is paid according to the productivity of the marginal migrant, which is smaller than the average productivity of the migrants (of the same type). On the other hand, the native-born population shares with migrants the tax collected from capital income (migrants have no capital), because the transfer that the migrants receive is not financed fully by their labor income tax. That is, the capital tax revenues paid by the native-born population ‘leak’ also to the migrants. Each union-member country in a competitive regime evidently balances at the margin the gains and losses from migration. In doing so, each country (being a “utility-taker”) takes the well-being of the migrants as given. It ignores the fact that when it adopts a fiscal-migration policy that admits an extra migrant, it raises the well-being that must be accorded to migrants to elicit them to migrate. All other union member countries are needed in order to elicit the migrant to come in. as a result, it offers migrants too high level of the social benefit, and admits a too high share of low-skilled migrants—the *fiscal externality*. Indeed, the union member states admit a higher share of low-skill migrants when they compete with each other than when they cooperate. As expected, the cooperating states, facing an upward-sloping supply of migrants (of both high-skilled and low-skilled types) exploit their market power by admitting smaller numbers of high-skill and low-skill migrants, as compared to the federal regime where they compete with each other. However, the lower inter-state mobility of people in the EU, compared to the US mitigates *fiscal externality* across EU member states.

Can *fiscal externality* be sufficiently significant to explain key policy differences between the EU and the US? A rigorous empirical analysis is needed to test the fiscal-externality hypothesis,⁶ we can only note that the

⁶Useful example for the coordination-competition factor in our analysis is the EU-US skill based visa policy. US migration policy has a strong element of selection of high skilled. Launched as part of the Immigration Act of 1990, the H-1B visa program is intended to satisfy demand for workers with a bachelor’s degree, or higher, in occupations that require specialized technical knowledge. The high-skilled visa program is effectively in many cases a path to US citizenship. Various immigration schemes have been developed to attract highly skilled migrants from outside the European Union. The most common scheme

fiscal-leakage externality, which is essentially at the root of our argument, is generated by income differences between migrants and the native-born. In reality, these differences are very significant.

Following the 2020 pandemic crisis there will likely be a rebalancing in the federal system from states to the federal system. An early indicator move towards greater fiscal union in the EU is the recent agreement on pandemic relief fund. The EU's agreement on a €750bn recovery fund coupled with a new seven-year €1.074tn budget is a landmark moment in European integration. For the first time, the EU will be able to run a federal deficit to respond to an economic shock. It will raise commonly-issued debt and channel a large part of it in grants to countries most in need of a rebound from the coronavirus economic slump.⁷

APPENDIX: MODELLING FISCAL—EXTERNALITY WITHIN THE UNION

Assume a continuum of member states within an economic union, with free mobility of goods, capital, and people. A representative union member country produces a single good by employing two labor inputs,

is the Dutch highly skilled migrant program (*kennismigrant*). There are also other types of permits attempting to attract highly skilled migrants. The average EU member high skilled migration policy is much less effective.

⁷Faced with further fracturing the European Union, Germany broke with decades of German economic orthodoxy and agreed to back the idea of collective European debt to help those countries that have been hit hardest by the pandemic. Germany joined with France to propose borrowing 500 billion euros, for a common recovery fund. Its repayment would be the financial responsibility of the entire bloc, but it would primarily benefit the poorer south, which has been hit hardest by the pandemic. The EU commission's new fund consists of €440bn in grants (a crucial element), €60bn in guarantees and €250bn in loans. Two-thirds of the grants are to be channeled via a "Recovery and Resilience Facility". Funds would be raised in capital markets between 2021 and 2024, to be disbursed over several years. To put the €750bn in context, it is close to 1.5% of EU GDP over three years. It includes two innovations: the ability of the commission to borrow on its account and so create a new class of EU bonds; and, the fact that the borrowing is to be financed by new European-wide taxes on carbon emissions or financial and digital transactions. The recovery plan is supported by countries such as Italy and Spain that have borne both the economic and medical brunt of the Covid-19 crisis. However, the recovery fund's provision of support as grants to stricken countries has provoked resistance from the Netherlands, Austria, Denmark and Sweden, which prefer loans.

skilled and unskilled, and capital according to a Cobb-Douglas production function,

$$Y = AK^\beta L_s^{(1-\beta)\alpha} L_u^{(1-\beta)(1-\alpha)}, 0 < \alpha < 1, 0 < \beta < 1 \quad (1)$$

where, Y is GDP, A denotes a Hicks-neutral productivity parameter, and L_i denotes the input of labor of skill level i , where $i = s, u$ for skilled and unskilled, respectively, K denotes the input of capital, β denotes the share of capital, and α denotes the share of skilled labor in the total share, $1-\beta$, of labor.

The competitive wages of skilled and unskilled labor are, respectively,

$$w_s = (1-\beta)\alpha \frac{Y}{L_s} w_u = (1-\beta)(1-\alpha) \frac{Y}{l_u} \quad (2)$$

Note that the abundance of skilled labor raises the wage of the unskilled, whereas abundance of unskilled labor raises the wage of the skilled.

Total population (native born and migrants) is as follows

$$N = 1 + m_u + m_s \quad (3)$$

where, N denotes the total population size, the native-born population equals 1, and m_u, m_s stand for the policy-determined number of unskilled and skilled migrants, respectively.

The individual household can rent her capital either at home or at the other host countries. Thus, the total stock of capital owned by residents, $SK_s + (1-S)K_u$, S stands for the relative size of unskilled individuals, and K_s, K_u denote capital endowment of unskilled and skilled individuals respectively. We assume that migrants own no capital. Economy capital endowment, $SK_s + (1-S)K_u$, does not have to equal domestic capital K , because capital out- and in-flows are permitted. Domestic return to capital is:

$$r = \frac{\beta Y}{K} \quad (4)$$

Domestic return to capital relates through arbitrage to world return \bar{r} :

$$(1 - \tau_K)r = \bar{r} \quad (5)$$

where τ_K is the policy-determined capital-income tax rate. The representative host country determines its fiscal policy by majority voting among the native born. For concreteness, we describe in details the case where the native-born skilled form the majority, that is $S > 1/2$.

The two types of individuals, skilled and unskilled, share the same utility function,

Where c denotes consumption and $\varepsilon > 0$, in the labor supply elasticity.

$$u = c - \frac{\varepsilon}{1 + \varepsilon} l^{1+\varepsilon} + \ln(b) \quad (6)$$

where c denotes consumption spending, l denotes labor supply, and b denotes social benefit, which is distributed uniformly across the population.

The budget constraint of an individual with skill level i is

$$c_i = (1 - \tau_L)l_i w_i + (1 + \bar{r})\bar{K}_i \in \{s, u\} \quad (7)$$

Note that an individual earns a net-of-tax rental price of r on all the stock of capital she owns, no matter in which country it is employed.

Individual utility-maximization yields the following labor supply equation

$$l_i = ((1 - \tau_L)w_i)^\varepsilon, i \in \{s, u\} \quad (8)$$

The indirect utility function of an individual of skill level $i \in \{s, u\}$ is given by

$$V_i(\tau, b) = \ln(b) + \frac{1}{1 + \varepsilon} ((1 - \tau)w_i)^{1+\varepsilon} + (1 + \bar{r})\bar{K}_i, i \in \{s, u\} \quad (9)$$

The revenues from all taxes are redistributed equally to all residents (native born and migrants alike) as a social benefit, b , per capita. The government budget constraint is given by:

$$b = \frac{\tau_K r K + \tau_L (w_s L_s + w_u L_u)}{N} \quad (10)$$

Note that we assume that migrants are fully entitled to the welfare state system. That is, they pay the tax rate τ_L on their labor income (they own no capital) and receive the benefit b . The social benefit, b , captures not only a cash transfer but also outlays on public services such as education,

health, and other provisions, that benefit all workers, regardless of their contribution to the finances of the system. Thus, b is not necessarily a perfect substitute to private consumption.

Presumably, an unskilled median voter opts to admit skilled migrants, for two reasons: First, such migrants are net contributors to the finances of the welfare state that is the tax that each one pays (namely, τ_L , w_s and L_s) exceeds the benefit she receives (namely, b). A high skill median voter may opt for both types of migrants. Unskilled migration raises the wage of the skilled but imposes a fiscal burden on the welfare state. Skilled migration lowers the wage of the skilled but contributes positively to the finances of the welfare state.

Competition Regime

For each skill type there is a heterogeneity of some migration cost (due to some individual characteristics such as age, family size, portability of pensions, etc.). This cost generates a heterogeneity of reservation utilities, giving rise to an upward sloping supply of migrants.

Being small enough, each host country takes these cutoff Reservation Utility levels as given for her. That is, each host country behaves as a “utility-taker”, in analogy to the “price taking” behavior of each agent in perfectly competitive market.

A representative host country takes the migrants cutoff utility levels, V_s and V_u , and as given, and also takes the net of tax return to capital, r , as given. Denote by an asterisk (*) the levels of the economic variables that ensue with optimal fiscal policy.

We denote the supply function of skill $i \in \{s, u\}$ by:

$$N_i = f_i(V_i) \tag{11}$$

where N_i is the number of migrants of skill type i and V_i is the level of utility enjoyed in the host counties, $i \in \{s, u\}$.

Each one of the n identical host countries admits $m s^*$ skilled migrants and $m u^*$ unskilled migrants. Thus, the aggregate demand for skilled and unskilled migrants is $n m s^*$ and $n m u^*$. Thus, the fiscal policy variables, τ_L , τ_K and b , and migration rates, are chosen so as to maximize the indirect utility of the skilled (given in Eq. 9), subject to the government budget constraint (given in Eq. 10), and to the free migration constraints:

$$V_{s(\tau_L, \tau_K, b)} - (1 + \bar{r})\bar{K}_s = \bar{V}_s \tag{12}$$

$$V_{u(\tau_L, \tau_K, b)} - (1 + \bar{r})\bar{K}_u = \bar{V}_u \quad (13)$$

Therefore, the cutoff utilities enjoyed by migrants, V_s and V_u , are determined in a symmetric Nash-equilibrium, so as to equate supply and demand:

$$nm_s^* = f_s(\bar{V}_s) \quad (14)$$

$$nm_u^* = f_u(\bar{V}_u) \quad (15)$$

Also, the union wide net-of-tax rental price of capital, r , is determined so as to equate world demand for capital, nK^* , to world supply, $n(SK_s + (1 - S)K_u)$, that is:

$$K^* = S\bar{K}_s + (1 - S)\bar{K}_u \quad (16)$$

Assuming that the migrants have the same preferences as the native-born, and recalling that migrants own no capital.

In determining their policy, the government takes also into account that the competitively-determined variables, w_s , w_u , L_s , L_u , r , K , Υ , m_u , m_s , are determined in equilibrium, and indirect utility levels, \bar{V}_s and \bar{V}_u are determined in the world economy.

Coordination Regime

Assume that there exists coordination across states of the union in both fiscal and migration policies. Naturally, this coordination comes at the expense of migrants. In a coordinated-policy regime the cutoff reservation utilities, \bar{V}_s and \bar{V}_u , are also controlled by the host countries, taking into account that migration takes place according to the migration Eqs. (14) and (15). Thus, in the coordination regime each country internalizes the *fiscal externality* which exists within the union in the competitive regime.

EPILOGUE

This book is about three key dimensions in economics—globalization, migration and welfare state—that are of enduring interest. These issues are of particularly important to consider at the present moment given the strains posed by the Corona pandemic: there is at least a temporary setback to globalization and migration, and the cost of fighting the pandemic will also weaken the ability of governments to provide the welfare state in a style to which many of their citizens have become accustomed. The book’s analysis involves a three-way comparison: a free-migration regime as distinguished from a restricted-migration regime, a welfare-state regime distinguished from a non-redistribution, free-market regime, and a low-income-majority regime contrasted with a high-income-majority regime. The book also explains how the changing functioning of the welfare state in the presence of intensified globalization, and the welfare-state’s voter attitudes towards openness, depend on the open-economy fundamentals, such as relative factor endowments, and saving propensities. The book demonstrates these issues using real-world historical episodes, with Israel deemed as a functioning trifecta, due to its unique migration policy and its intensive links to the rest of the world, and the US and Europe deemed as imperfectly functioning trifecta, due to the coordination involved in their multiple-tier system as federations, and the inherent political-economy hurdles of pursuing migration policies.

Trade Globalization: Re-trending

In the post-corona era, firms have strong incentives to revise course and substitute GVCs with adopting robots. This shift lowers demand for unskilled workers while increase demand for high-skilled workers, thereby raising wage gaps.

The corona virus pandemic has altered the interactions that globalization, migration and redistribution policies will take. While the pandemic could strengthen nationalism and isolationism and accelerate the retreat from globalization, the outbreak also could spur a new wave of international cooperation in health, environment, exchange of information, of the sort that emerged after World War II. The pandemic is driving the world economy to retreat from global economic integration. National security and public health concerns are providing new rationales for protectionism. The Great Financial Recession of 2008–2010 marked a historic turning point in the degree of global economic integration. In the 2020 post-pandemic era, policymakers appear poised to take deliberate steps to reinforce the movement toward de-globalization.

Corona Pandemic: Implications for Mobility

More broadly, the Corona crisis changed migration patterns. Border closures, suspended asylum programs, interruptions in global transportation and stay-at-home lockdowns have drastically curbed migration around the world, particularly from poorer nations to rich ones. Once exit strategies begun to be implemented, the pent-up demand drove impatient people to start surging across borders, as Central Americans have done recently in migrant caravans headed to the US, and Syrians and others did in 2015 during the European migration crisis. However, social distancing and border restrictions in wealthy countries will remain long after the first Corona infection wave subsides. The pandemic is likely to change the migration skill composition patterns as low skill workers typically present more social-distancing problems than high-skilled workers do. Autor (2020) points to key factors for the projected decline in demand for low-skill workers in the post-Corona-virus era: the health risk in personal services, the acceleration of automation, the reallocation of sales towards large firms, and the likely change in demand away from retail services. The impact on migrant-skill-composition of social distancing, the matching

technology, the expected arrival time of a vaccine, and testing with or without contact tracing are yet to be rigorously explored.

Growing inequality in the Post-Corona economy may also evolve from the built in advantage in the workplace of remote versus co-located Work.¹

Political Economy Dimensions of the Welfare State Under Globalization

The welfare state is crucial for spreading the gains from financial asset trade across various income groups. We present a political economy analysis, where the pillars of the welfare state system are determined by the majority (either the low-skilled or the high-skilled), to assess the forces of globalization on income inequality. The welfare state allows immigration in order to sustain its financing. One would naturally expect that as population ages, the political clout of the elderly would strengthen the pro-welfare state coalition. Similarly, one would expect this coalition to gain more political power as more low-skill migrants are naturalized. Ageing tilts the political power balance in the direction of boosting the welfare state, imposing a growing burden on the existing workforce, by allowing more immigration.

State-level Coordination vs. Competition in Federal Systems

Each union member country in a non-coordination federal system evidently balances on the margin the gains and losses from migration. In doing so, each country (being a utility-taker) takes the reservation utilities which govern immigration as given. It ignores the fact that to elicit the marginal migrant, a fiscal-migration policy must accord to him or her the same utility offered by other union member countries. As a result, every union member offers migrants too generous social benefits, and admits too high a share of low-skilled migrants.

¹Dingel and Neiman (2020) raise a fundamental question about the modern economy: how many jobs can be performed at home? We classify the feasibility of working at home for all occupations and merge this classification with occupational employment counts. They find that 37% of jobs in the United States can be performed entirely at home, with significant variation across cities and industries. Applying our occupational classifications to 85 other countries reveals that lower-income economies have a lower share of jobs that can be done at home.

As expected, the cooperating states facing an upward-sloping supply of migrants (of both types) exploit their market power by admitting smaller numbers of high-skilled and low-skilled migrants, as compared to the case when they compete with each other. Consequently, union member states admit a higher share of low-skilled migrants when they compete with each other than when they cooperate.

The very advantage of coordination over competition is that the former allows the union member countries (states) to take into account the effect of policy on economic variables (prices, reservation utilities) that each individual country takes as given under competition. The union member countries are no longer price- or utility- takers in the coordination regime as they were in the competitive regime

Migration Policy: What Comes Next?

While high skilled and therefore high-wage migrants may be net contributors to the fiscal system, low skilled migrants are likely to be net recipients, thereby imposing an indirect tax on the taxpayer of the receiving country.² Sooner or later, then, migrants may shift the balance of politics among ethnic groups, economic classes, or age groups, and reshape the distribution of wealth and disposable income. That is, immigrants influence the size of the welfare state directly through the electoral system, and indirectly, through their effect on market based inequality.

²A highly developed social welfare system in the receiving country may greatly complicate matters, as emphasized by Razin et al. (2002b).

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