Israel and the World Economy: The Power of Globalization

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Israel and the World Economy: Power of Globalization

The Israeli economy, a remarkable development-success story, provides a *counter example* to the current *anti-globalization* arguments.
What’s that I DO

I will present an economic-history perspective of

Israel’s long struggle with inflation and of Israel’s

immigration story.
Part 1—Historical Background
Chapter 1: The Rise and the Conquest of High Inflation
Chapter 2: Immigration Wave: Soviet-Jew Exodus
Chapter 3: Understanding Migration and Income Inequality
Part 2—Globalization, Disinflation, and Financial Regulation

Chapter 4: The "Great Moderation" and Israel's Disinflation

Chapter 5: The 2008 Global Crisis and Israel-Economy Resilience
Part 3—Information-Technology Surge
Chapter 6: Technology Transmission through FDI
Chapter 7: Israel High Technology and Globalized Finance
Part 4 -- Trending Developments
Chapter 8: East Asia Rises
Chapter 9: Israel’s Exports Rerouted
Chapter 10: Immigration Policy of Advanced Economies Enabling Brain Drain from Israel
Chapter 11: High Fertility and Low Skill Acquisition
Chapter 12: Costs of Occupation
Prologue
Israel Triumph over Inflation

Chapters 1 and 4
High Inflation

Inflation accelerated starting in the 1977 and Stabilized in 1985:

CPI Inflation, 1969-1993, %

Source: BOI
Inflation: Expression of Populism

1. Early acceleration to three-digit levels, lasting 8 years, generated by populist government;

2. Credible stabilization program, based on political backing triggered sharp fall in inflationary expectations, and consequently to sharp inflation reduction to two-digit levels;

3. Convergence to the advanced countries’ levels during the “great Moderation”;
Political Background

• The newly elected government 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).

• 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 “Maapach”, was a game changer for economic policy in Israel.
Macroeconomic populism

Dornbusch and Edwards (1989) define populism as policies that are favoured by a substantial part of the voting population, left behind and uninformed, but which ultimately harm the majority of the population.
The Other Side of the Political Turnover: Economic-Regime Switch

• The pre-MAAPACH economic regime had pegged exchange rate, capital controls, and fiscal discipline.

• The post-MAAPACH regime eased capital controls without putting regulatory safeguards, relaxed fiscal discipline and allowed accommodative monetary policy.
A country can only achieve **two** of three goals: Monetary Autonomy, Exchange Rate Stability, and Capital mobil.
Populism: The “sugar high” Stage

In the **First Phase** after their policies are enacted, the populists are vindicated. The surging government spending and mandated wage hikes tend to produce a temporary “sugar high”, followed by a crash.
Populism’s: Sobering Stage

Beneath the surface, however, the country’s economic potential is deteriorating and inflation accelerates. Financial disorders appear. Populist leader recommits to harmful policies and steers the country towards decline, capital flight, and sometimes debt crises.
Economic Activity During the Inflation Crisis

- Economic activity severely impacted by swelling credit frictions

Output Growth and Unemployment, 1977-1986

Source: ICBS, World Bank
Populism: HyperInflation Generating

- Budget deficit explosion.
- Relaxation of BOI *commitment to peg* the exchange rate at a certain level.
- Relaxation of Capital and Prudential Controls.
The Other Side of Deficit: Real Appreciation

Price Level and Exchange Rate, 1977-1986

Source: BOI
Populism Must Rely on Seigniorage Revenue

• Failing economic governance made it essential for the government to raise revenue through money expansion.

• The fast-expanding government spending and transfer were financed by the printing press.

• But, how much seigniorage revenue (the profit made by a government by issuing currency) will the inflation-induced money creation generate?
Seigniorage Generated through Inflation Spike

Calvo (2016) writes: “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.”
The Irrelevant Steady State Calculations

Necessary condition for maximization of seigniorage revenue across steady state is that the inflation rate is equal to one over the semi-elasticity of demand for money. This Laffer point is significantly below the rates in high inflation episodes.

\[ \max \pi \cdot m(\pi) \rightarrow \pi = \frac{1}{\lambda} \]

\[ \lambda = \frac{\partial m(\pi)}{m(\pi) \partial \pi} \]
Populism: Monetized Budget
Deficit leads to Balance of Payment Crisis

Because of the steadily worsening fiscal imbalances, the central bank’s domestic assets grow so that:

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

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

\[
1 + i_t = \left(1 + i_t^*\right) \frac{S_{t+1}}{S_t}
\]
International Reserves and Exchange Rate

Exchange rate regime switches with Speculative Attack:

\[ \log(S_t) \]

\[ \log(S_{t}^{\text{shadow}}) \]

\[ \log(B_{H,T}) \]

\[ \log(B_{F,T}) \]

\[ \log(B_{F,0}) \]
The Saga of Inflation Stabilization

Why is inflation stabilization so hard to achieve?
Time Inconsistency Makes Inflation Stabilization Less Likely to Occur

• 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, $\pi^e$, so that inclusive of the inflation premium, the nominal interest rate is

$$i = 1 + \pi^e,$$

• and the next-period price level is equal to

$$1 + \pi^e.$$
Effects of Expectations

• Imagine a simple economy where there is a stock of public debt denominated in domestic currency, $D$.

• 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

$$(1 + i)D.$$
Effects of Expectations: Real Value of Public Debt

• 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.
Inflation Stabilization: The Political Backing

• Following almost 8 years of the hyperinflation economic chaos, 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.
Inflation Stabilization Must Involve Income Redistribution

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 redistribution of income must accompany the inflation-halting step.

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 enabled a sharp nominal devaluation that ended in a competitiveness-boosting real devaluation.
Institutional Features of Stabilization Policy

• A new legislation ("Khok Hahesderim") 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.
The No-Printing Clause—The Seed for Israel’s Central Bank Independence

The 1985 Israel inflation stabilization package included the non-printing item, preventing the Bank of Israel to purchase from the treasury directly government treasuries: “Chok lee Haadpasa”.
Policy Credibility: Key to Success

Sargent (2009) argues that high inflation can be stopped quickly, if inflationary expectations are consistent with a credible stabilization program. His argument is that inflationary expectations are quick to adjust when the economic regime credibly shifts. Israel’s expectations-changing episode is akin to Volcker-policy effect on inflationary expectations in the US, see Sargent (1999).
The Quick Adjustment of Inflationary Expectations

Cukierman (1988b) reports that for a brief period, when the public feared that the government will not be able to prevent the initial large one-shot (policy-induced) price shock from spreading, inflationary expectations started to decline sharply and steadily within months after the implementation of the 1985 stabilization policy. Six months later there was no significant difference between actual and expected inflation.
How Israel moved post-stabilization inflation down to Advanced-Country's level: The Benefits of Globalization
The “Great Moderation” and the great-Globalization Wave

A wave of globalization took place in the 1990s after the collapse of communism and the openness acceleration in China. The 1992 single-market reform in Europe and the formation of the euro zone were watersheds of globalization. The globalization wave has swept emerging markets in Latin America, European transition economies, Emerging markets, including China and India, likewise became significantly more open.
The “Great Moderation”


Source: FRED, BLS, an extension to Eckstein, Setty and Weiss (2015)

Notes: Detrended 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.
The Decline of World inflation

Global inflation declined from 30 percent to 4 percent between 1993 and 2003.
Why Did Inflation Rate Fall During the 1990s?

• A hypothesis, which Rogoff put forth, is that “globalization—interacting with deregulation and privatization—has played a strong supporting role in the past decade’s (i.e., the 1990s) disinflation.”

• A contributing factor for the moderation also is the increasing independence of central banks.
Financial Globalization: Useful Measure of Financial Integration

- Full international financial integration requires that in the long run:

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

$i$ stands for Israel, Canada, Germany and the United Kingdom
$q$ stands for the real exchange rate vis a vis the US dollar

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

$E$ stands for the nominal exchange rate, vis a vis the US dollar
$P$ stands for the price level
Source: Stats Bureau, FERD, 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.
Convergence of Inflation Rates

Figure 4.1 shows the convergence of Israel inflation rate to US, Germany and OECD rates.

Source: The World Bank
Drivers of Domestic Inflation: Through the Lance of the Phillips Curve

1. The price of imports and the exchange rate;
2. Capacity pressures and labor market tightness in the domestic economy;
3. Public expectations about future inflation, future exchange rates, and future foreign prices;
4. The amount of world economy slack;
5. The level of foreign wages are also important for countries open to immigration.
Globalization Flattens the Phillips Curve—Inflation Falls

• With perfect mobility of labor, capital, and goods, the log-linear approximate aggregate supply curve (Phillips Curve) is given by:

\[
\tilde{\pi}_t = \kappa \cdot \left[ \frac{\omega_p \cdot n}{1 + \omega_p \theta} \cdot x_t + \frac{\omega_p \cdot (1-n)}{1 + \omega_p \theta} \cdot (\tilde{Y}_F - \tilde{Y}_N) + \frac{1}{1 + \omega_p \theta} \cdot \tilde{w}_t^W + \frac{(1-n)}{n} \cdot \tilde{q}_t \right] \\
+ \frac{(1-n)}{n} \cdot (\tilde{q}_t - \tilde{q}_{t-1}) + \beta \cdot E_t \left[ \frac{(1-n)}{n} (\tilde{q}_{t+1} - \tilde{q}_t) \right]
\]
Where $\hat{\pi}_t$ is the deviation of CPI inflation from its target;

$x_t \equiv (\hat{Y}_t^F - \hat{Y}_t^N)$ is the domestic output gap; $(\hat{Y}_t^F - \hat{Y}_t^N)$ is the difference between foreign output and domestic natural output; the parameter $\omega_p$ is the elasticity of the marginal cost with respect to producer's output, $\theta$ is the intra industry elasticity of substitution, $\sigma$ stands for the intertemporal elasticity of substitution, and $\beta$ 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 Flattening of the Phillips Curve

![Graph showing Unemployment and Inflation from 1990 to 2016]
2008 Global Depression and Israel’s Resilience to Depression Forces
Capital Market Resilience: Portfolio Capital Outflows from the US

Figure 5.8 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.

Portfolio Flows, Crisis Economies (Index, Dec 1994 = 100)

Source: Anusha Chari
Growth during the Crisis

Figure 5.6 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.

Real GDP, Israel and Selected Countries (Jan 2003 = 100)

Source: FRED
How Israel avoided the Credit Bubble and Small Exposure to Toxic Assets?
Creditor protection and Resistance

Israel is among the *Creditor rights index* = 3 countries, grouped together with Germany and Australia.

Italy, and Norway, is among *Creditor rights index* = 2 countries.

Hong Kong belongs to *Creditor rights index* = 4 countries.
Creditor rights index (CRI) compiled by Djankov et al. (2007). This is a panel that covers 129 countries for 1978–2008. The CRI ranges from 0 to 4, with a higher number associated with better protection for creditors.
<table>
<thead>
<tr>
<th>Low creditor rights index</th>
<th>High creditor rights index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creditor rights index = 0</td>
<td>Creditor rights index = 3</td>
</tr>
<tr>
<td>Mexico</td>
<td>Singapore</td>
</tr>
<tr>
<td>Colombia</td>
<td>Austria</td>
</tr>
<tr>
<td>France</td>
<td>Venezuela</td>
</tr>
<tr>
<td>Peru</td>
<td>Malaysia</td>
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<tr>
<td></td>
<td>South Africa</td>
</tr>
<tr>
<td>Creditor rights index = 1</td>
<td></td>
</tr>
<tr>
<td>Greece</td>
<td>Poland</td>
</tr>
<tr>
<td>Poland</td>
<td>Korea</td>
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<td>Czech Republic</td>
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<tr>
<td>Ireland</td>
<td>Philippines</td>
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<td></td>
<td>Denmark</td>
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<tr>
<td>Portugal</td>
<td>Hungary</td>
</tr>
<tr>
<td></td>
<td>Creditor rights index = 4</td>
</tr>
<tr>
<td>Brazil</td>
<td>United States</td>
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<tr>
<td>United States</td>
<td>United Kingdom</td>
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<tr>
<td>Canada</td>
<td>Switzerland</td>
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<td></td>
<td>Hong Kong</td>
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<td>Argentina</td>
<td>Sweden</td>
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<td></td>
<td>New Zealand</td>
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<td>Pakistan</td>
<td>Finland</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Creditor rights index = 2</td>
<td></td>
</tr>
<tr>
<td>Bulgaria</td>
<td>Chile</td>
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<tr>
<td>Belgium</td>
<td>Turkey</td>
</tr>
<tr>
<td>Italy</td>
<td>China</td>
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<tr>
<td>Sri Lanka</td>
<td>Thailand</td>
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<tr>
<td>Norway</td>
<td>India</td>
</tr>
<tr>
<td>Russia</td>
<td>Spain</td>
</tr>
<tr>
<td>Romania</td>
<td>Japan</td>
</tr>
<tr>
<td>Indonesia</td>
<td></td>
</tr>
</tbody>
</table>
Israel Avoided the Zero Lower Bound Trap Because the Natural Rate Remained Positive!
Domestic Credit-Output Ratio: International Comparisons

As shown in figure 5.4, Israel did not have a significant credit growth 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).

Domestic Credit to Private Non-Financial Sector (% of GDP)

Avoiding the Zero Lower Bound Trap while the Natural Rate Remained Positive!

Depression shock: Inflation down policy rate down by more real interest rate, \( r \), down policy rate reaches zlb=0

Output Gap remain stuck!
Exchange-Rate Policy Reaction

Like emerging economies, Israel monetary authorities were concerned about monetary expansion in the West, appreciating their currencies.

The “Great Recession” downward pressures on the demand for Israel’s exports and the strengthening of the Israeli currency as capital inflows picked up.
Under Valued Exchange Rate

The rationale for the Bank of Israel forex market intervention 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.
Israel did not fall into the liquidity trap

Israel’s did not suffer a financial shock!

It’s natural real interest rate did not fall below zero and therefore it avoided the policy rate zero lower bound which leads to liquidity trap
Israel’s Spike in the Credit Default Swaps: Prerequisite for Foreign-Exchange Market Intervention

A credit default swap (CDS) is a financial swap agreement that the seller of the CDS will compensate the buyer (usually the creditor of the reference loan) in the event of a loan default (by the debtor) or other credit event.
Small Countries Engaging in a Currency War

Nominal Exchange Rate of Various Countries that Engaged in the "Currency War" : Israel, Switzerland, Sweden, Brazil and Indonesia (2007=100)

Source: FRED

Note that if the risk premium does not change the sterilized foreign-exchange-market intervention cannot affect the exchange rate.
The Immigration Story

Immigration is at the core of the anti-globalization wave!
Around the World: Almost Never Free Migration

Jeff Sachs (2017) 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 the doors wide open” will lose.” Rational, and generous policy that also resonates politically, will not eliminate national borders altogether.
Milton Friedman immigration quotation

"You cannot simultaneously have free immigration and a welfare state."
Israel’s story is unique!

Almost no other country allows for free immigration.

Israel’s Free immigration regime is based on the “Law of Return”.
Established Population and Immigrants in percentage of established population

<table>
<thead>
<tr>
<th>Period</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1922-32</td>
<td>8.2</td>
</tr>
<tr>
<td>1932-47</td>
<td>6.4</td>
</tr>
<tr>
<td>1947-50</td>
<td>19.8</td>
</tr>
<tr>
<td>1950-51</td>
<td>13.2</td>
</tr>
<tr>
<td>1951-64</td>
<td>2.2</td>
</tr>
<tr>
<td>1964-72</td>
<td>1.3</td>
</tr>
<tr>
<td>1972-82</td>
<td>0.9</td>
</tr>
<tr>
<td>1982-89</td>
<td>0.4</td>
</tr>
<tr>
<td>1989-2001</td>
<td>19.0</td>
</tr>
</tbody>
</table>

## Immigration Waves and Growth

<table>
<thead>
<tr>
<th>Period</th>
<th>Immigrants as a Percentage of Established Population</th>
<th>Annual Percentage Growth Rate of Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1922-32</td>
<td>8.2</td>
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<td><strong>1989-2001</strong></td>
<td><strong>19.0</strong></td>
<td><strong>2.9</strong></td>
</tr>
</tbody>
</table>
Emigration of Soviet Jews

Graph showing the emigration of Soviet Jews to Israel, USA, and Germany over the years.
The Skill, Age and Income of Immigrants from the FSU and the National Average, 1990-2011

<table>
<thead>
<tr>
<th></th>
<th>Immigrants from the FSU</th>
<th>National Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share in Total Population (%)</td>
<td>14.5</td>
<td>100</td>
</tr>
<tr>
<td>Household Size (numbers of standard persons)</td>
<td>2.32</td>
<td>2.74</td>
</tr>
<tr>
<td>Schooling Years Of Head of Household (no.)</td>
<td>14</td>
<td>13.3</td>
</tr>
<tr>
<td>Head of household with a bachelor degree (%)</td>
<td>41.1</td>
<td>29.5</td>
</tr>
<tr>
<td>gross monthly labor income per standard person (2011 NIS)</td>
<td>4,351</td>
<td>4,139</td>
</tr>
</tbody>
</table>

[1] Including immigrants
The 1990s Immigration of the Soviet Jews

Immigration wave is like a positive "Supply-side shock".

It contributed to inflation reduction and to the high-tech sector.

But...

it was also correlated with a sharp rise in disposable income inequality.
Intergenerational Mobility: Probability of Outranking Parents
<table>
<thead>
<tr>
<th>Probability of outranking parents</th>
<th>Israel</th>
<th>Asia / N. Africa</th>
<th>Euro. / Ameri ca</th>
<th>FSU</th>
<th>Ethiopia</th>
</tr>
</thead>
<tbody>
<tr>
<td>40%</td>
<td>49%</td>
<td>37%</td>
<td>58%</td>
<td>75%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rank shift pace, controlling for initial family position</th>
<th>-0.22</th>
<th>-0.02</th>
<th>-</th>
<th>2.69***</th>
<th>-4.58***</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(0.17)</td>
<td>(0.15)</td>
<td></td>
<td>(0.16)</td>
<td>(0.49)</td>
</tr>
</tbody>
</table>

First row is the probability of the child of reaching higher percentile in children’s generation distribution compared to average percentile in their income distribution. Second row is the regression results of child-rank on the population groups, controlling for parents’ income rank using 100 percentile dummies. Base group is of families with Asia / North Africa origins. The sample is of children born amongst those 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).
Earning Deciles of Children Born to the Bottom-Decile Parents

Population
FSU Immigrant Families
Probability of outranking parents by 5 percentiles by parents’ quantiles
Income Inequality and Redistribution: International Comparison
Disposable Income Inequality in Israel and Several EU-15 Countries, 1973-2013
Redistribution in Post Soviet-Jew Immigration Wave

Source: Momi Dahan (2017)
Understanding Immigration-Redistribution Puzzle with a political economy model

I use a majority-voting fiscal-burden model to explain the mechanism through which a supply side shock of skilled migration can change the political-economy equilibrium policies.
Role of Immigrants’ Vote

Razin, Sadka and Swagel (J Pub E 2001) compare the political equilibrium with and without voting by immigrants.

**Without Immigrants’ voting:**
unskilled (skilled) immigrants raise (lower) the fiscal burden, which reduces (raises) redistribution.

**With Immigrants’ voting:**
unskilled immigrants strengthen (weaken) the pro-redistribution coalition, which raises (reduces) redistribution.
Voting turnout pattern of Soviet-Jew Immigrants

Voting turnout patterns of Soviet-Jew immigrants to Israel in the 2001 elections, conducted by Arian and Shamir (2002) find:

No marked difference in the voting turnout rates between these new immigrants and the established population.
Immigrants’ Academic Characteristics

Even more striking is the percentage of the head of the household with a bachelor degree: 41.1% among the new immigrants, compared to a national average of just 29.5%.
Free Migration: Unique to Israel

Israel’s Law of Return not only enabled free immigration but also grants these immigrants immediate citizenship, and naturally voting rights.
Disposable income inequality

Disposable income inequality in Israel, which was roughly stable until the beginning of the 1990s, took a sharp rising trend thereafter, even though no such change occurs with respect to the market-triggered inequality. Interestingly, the upward shift in disposable income inequality occurs following the start of the immigration from the FSU. In this paper we provide a political economy explanation of how the immigration can cause such a shift in disposable income inequality.
Political-Economic Model

There are just two types of workers: “skilled” (with a symbol $S$).

The wage per unit of labor of a skilled worker is $w$, whereas an unskilled worker earns a wage of $\rho w$ per unit of labor, where $\rho < 1$. All native-born (with a symbol $N$) are initially unskilled. and “unskilled” (with the symbol $U$).
Cost of education

But, a native-born 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. We normalize the number of native-born individuals to 1.
Individual identity

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 $[o, \bar{c}]$. 
Initial endowments

- All native-born individuals are endowed with $E$ units of composite good, the single good in this economy. All individual inelastically supply one unit of labor. If a c-individual acquires education and becomes skilled, her income is (denoted by $I^n_s$)
- One can also consider the case in which $I$ is negatively correlated with $\bar{C}$.
- Note that this specification assumes that capital does not depreciate at all.
Income groups and cost of education

\[ I_s^N(0) = (1 - t)w + b + E(1 + r) \]

\[ I_s^N(c^*) = (1 - t)wp + b + (E - c^*)(1 + r) = I_u^N \]

\[ I_s^M = (1 - t)w + b \]

\[ I_u^M = I_u^N - E(1 + r) \]
Income Groups: Ranking

In sum, we have the following ranking of incomes:

\[
I^M_U < I^N_U = I^N_S(c = c^*) < I^N_S(c > E) < I^N_S(c = E) = I^M_S < I^N_S(c < E).
\]
The income of the native-born as a function of \( c \)

The income of the native-born as a function of \( c \) is depicted in Figure 1. Note that \( I^n_S(c) \) declines in a straight line until it reaches \( c^* \)

\[
I^n_S(c^*) = (1 - t)w + b + (E - c^*)(1 + r)
\]
Supply of Migrants

\[ m_s = B_s (I_s^m)^{\sigma_s} \]

\[ m_u = B_u (I_u^m)^{\sigma_u} \]
Supply Side Block

\[ Y = AK^\alpha L^{1-\alpha}, \quad A > 0, \ 0 < \alpha < 1 \]

\[ L = n_s + \rho n_u + m_s + \rho m_u \]

\[ w = (1 - \alpha)A(K/L)^\alpha \]

\[ r = \alpha A(K/L)^{1-\alpha} \]
The Redistribution System

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

$$twL = b(1 + m_S + m_U)$$
Progressive and regressive systems

Note that it follows from government budget constraint 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 subsidy to wages (namely, a negative $t$) requires the government to impose a lump-sum tax (namely, a negative $b$) on all. When $t$ and $b$ are positive, the tax-transfer system is progressive. When they are negative, the system is regressive.
Majority voting

The policy variable is chosen by some natural and plausible version of a majority voting:

Start with a benchmark case, and suppose $B_S = B_U = 0$, so that there is no migration. In this case the political equilibrium is rather straightforward. If a $c_0$-individual would like to raise $t$, then all $c$-individuals with $c \geq c_0$ (whether skilled or unskilled) would certainly support such a move. This means that the distribution of the voters over the most preferred $t$ is single-peaked. Hence, the $t$ that will be chosen in equilibrium is the median voter’s most preferred $t$. 
Policy setup

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

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

There are also 15 equations in the model – (2)-(9) and (10)-(16) from which the endogenous variables get solved
Shock Experiment

We now keep all other parameter values constant and increase the parameter value of $B_S$. This supply-side shock triggers a wave of skilled migration.
Political Equilibrium Changes

Pre Shock—Unskilled native born are the largest sub group and unskilled (migrants plus native born) are the Majority

Post Shock—Skilled migrants are the largest sub group and Skilled (migrants plus native born) are the Majority
EFFECTS

Number of Skilled Migrants: Up
Number of Unskilled Migrants: Down
Income of Unskilled Native Born: Up
Income of Skilled Native Born: Up
Income of Skilled Migrants: Up
Income of Unskilled Migrants: Down
Wage: Down
Return to Capital: UP
Social Benefit: Down
Tax Rate: Down
## Numerical Effects

<table>
<thead>
<tr>
<th></th>
<th>$m_U$</th>
<th>$m_S$</th>
<th>$x_U$</th>
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<th>$I^N_U$</th>
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<th>$W$</th>
<th>$I$</th>
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<tbody>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parameter Value of $B_s = 1.2$</td>
<td>0.89</td>
<td>0.14</td>
<td>0.97</td>
<td>0.03</td>
<td>0.194</td>
<td>0.063</td>
<td>0.312</td>
<td>1.2</td>
</tr>
<tr>
<td><strong>Skilled Majority</strong>&lt;br&gt; (Skilled Migrants the Larger Sub-Group)</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parameter Value of $B_s = 8.2$</td>
<td>0</td>
<td>1.11</td>
<td>0.97</td>
<td>0.03</td>
<td>0.202</td>
<td>0</td>
<td>0.228</td>
<td>2.5</td>
</tr>
</tbody>
</table>
What Could Have Been with Free Migration

Jeff Sachs (2017) 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 the doors wide open” will lose.” Rational, and generous policy that also resonates politically, will not eliminate national borders altogether.
Milton Friedman immigration quotation

"You cannot simultaneously have free immigration and a welfare state."
Israel’s story is unique!

Almost no other country allows for free immigration.

Israel’s Free immigration regime is based on the “Law of Return”.
Established Population and Immigrants in percentage of established population

<table>
<thead>
<tr>
<th>Period</th>
<th>Annual Percentage Growth Rate of Population</th>
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</tr>
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<td>1922-32</td>
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<tr>
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<td>2.1</td>
</tr>
<tr>
<td>1982-89</td>
<td>0.4</td>
<td>1.8</td>
</tr>
<tr>
<td>1989-2001</td>
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<td>2.9</td>
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</table>

# Immigration Waves and Growth

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Emigration of Jews from the former USSR to Israel, USA and Germany (left axis, thousands) and the fraction of Jews in Israel (right axis, percent)
# The Skill, Age and Income of Immigrants from the FSU and the National Average, 1990-2011

<table>
<thead>
<tr>
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<th>National Average</th>
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<td><strong>Including immigrants</strong></td>
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<tr>
<td>Share in Total Population (%)</td>
<td>14.5</td>
<td>100</td>
</tr>
<tr>
<td>Household Size (numbers of standard persons)</td>
<td>2.32</td>
<td>2.74</td>
</tr>
<tr>
<td>Schooling Years Of Head of Household (no.)</td>
<td>14</td>
<td>13.3</td>
</tr>
<tr>
<td>Head of household with a bachelor degree (%)</td>
<td>41.1</td>
<td>29.5</td>
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<tr>
<td>gross monthly labor income per standard person (2011 NIS)</td>
<td>4,351</td>
<td>4,139</td>
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The 1990s Immigration of the Soviet Jews

Immigration wave is like a positive “Supply-side shock”.

It contributed to **inflation reduction** and to the **high-tech sector**.

But...it was also correlated with a sharp rise in disposable **income inequality**.
## Immigrants’ Educational Characteristics

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<td>Asia / N. Africa</td>
</tr>
<tr>
<td>----------------------</td>
<td>--------</td>
<td>------------------</td>
</tr>
<tr>
<td><strong>Probability of outranking parents</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>40%</td>
<td>49%</td>
</tr>
<tr>
<td><strong>Rank shift pace, controlling for initial family position</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-0.22</td>
<td>-0.02</td>
</tr>
<tr>
<td></td>
<td>(0.17)</td>
<td>(0.15)</td>
</tr>
</tbody>
</table>

First row is the probability of the child of reaching higher percentile in children’s generation distribution compared to parents’ average percentile in their income distribution. Second row is the regression results of child-rank on the population groups’ distribution controlling for parents’ income rank using 100 percentile dummies. Base group is of families with Asia / North Africa origins. The sample is of children born amongst matched to parents using administrative data.

Standard errors in parentheses; upper asterisks indicate ***p<0.01, **p<0.05, *p<0.1.
Earning Deciles of Children Born to the Bottom-Decile Parents
Probability of outranking parents by 5 percentiles by parents’ quantiles
Income Inequality and Redistribution: International Comparison
Disposable Income Inequality in Israel and Several EU-15 Countries, 1973-2013
Redistribution in Post Soviet-Jew Immigration Wave


Source: Momi Dahan (2017)
Understanding Immigration-Redistribution Puzzle with a political economy model

I use a majority-voting fiscal-burden model to explain the mechanism through which a supply side shock of skilled migration can change the political-economy equilibrium policies.
Role of Immigrants’ Vote

Razin, Sadka and Swagel (J Pub E 2001) compare the political equilibrium with and without voting by immigrants.

**Without Immigrants’ voting:**
unskilled (skilled) immigrants raise (lower) the fiscal burden, which reduces (raises) redistribution.

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unskilled immigrants strengthen (weaken) the pro-redistribution coalition, which raises (reduces) redistribution.
Voting turnout patterns of Soviet-Jew immigrants to Israel in the 2001 elections, conducted by Arian and Shamir (2002) find:

No marked difference in the voting turnout rates between these new immigrants and the established population.
Immigrants’ Academic Characteristics

Even more striking is the percentage of the head of the household with a bachelor degree: 41.1% among the new immigrants, compared to a national average of just 29.5%.
Free Migration: Unique to Israel

Israel’s Law of Return not only enabled free immigration but also grants these immigrants immediate citizenship, and naturally voting rights.
Disposable income inequality

Disposable income inequality in Israel, which was roughly stable until the beginning of the 1990s, took a sharp rising trend thereafter, even though no such change occurs with respect to the market-triggered inequality. Interestingly, the upward shift in disposable income inequality occurs following the start of the immigration from the FSU. In this paper we provide a political economy explanation of how the immigration can cause such a shift in disposable income inequality.
Political-Economic Model

There are just two types of workers: “skilled” (with a symbol $S$).

The wage per unit of labor of a skilled worker is $w$, whereas an unskilled worker earns a wage of $\rho w$ per unit of labor, where $\rho < 1$. All native-born (with a symbol $N$) are initially unskilled. and “unskilled” (with the symbol $U$).
Cost of education

But, a native-born 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. We normalize the number of native-born individuals to 1.
Individual identity

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 $[o, \bar{c}]$. 
Initial endowments

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

- One can also consider the case in which $I$ is negatively correlated with $\bar{C}$.

- Note that this specification assumes that capital does not depreciate at all.
Income groups and cost of education

\[ I_S^N = (1-t)w + b + E(1+r) \]

\[ I_S^N(c^*) = (1-t)wp + b + (E-c^*)(1+r) = I_U^N \]

\[ I_S^M = (1-t)w + b \]

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Income Groups: Ranking

In sum, we have the following ranking of incomes:

\[ I^M_U < I^N_U = I^N_S (c = c^*) < I^N_S (c > E) < I^N_S (c = E) = I^M_S < I^N_S (c < E). \]
The income of the native-born as a function of $c$

The income of the native-born as a function of $c$ is depicted in Figure 1. Note that $I_S^n(c)$ declines in a straight line until it reaches $c^*$

$$I_S^n(c^*) = (1 - t)w + b + (E - c^*)(1 + r)$$
Supply of Migrants

\[ m_s = B_s (I_s^m)^{\sigma_s} \]

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Supply Side Block

\[ Y = AK^\alpha L^{1-\alpha}, \quad A > 0, 0 < \alpha < 1 \]

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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 $b$.

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Note that it follows from government budget constraint 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 subsidy to wages (namely, a negative $t$) requires the government to impose a lump-sum tax (namely, a negative $b$) on all. When $t$ and $b$ are positive, the tax-transfer system is progressive. When they are negative, the system is regressive.
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Policy setup

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

$w, b, r, c^*, I_S^M, I_U^M, n_S,$

$\quad, n_U, I_S^N, m_S, m_U, H, K,$

$\quad, Y, L.$

There are also 15 equations in the model — (2)-(9) and (10)-(16) from which the endogenous variables get solved
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We now keep all other parameter values constant and increase the parameter value of $B_S$. This supply-side shock triggers a wave of skilled migration.
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Pre Shock—Unskilled native born are the largest sub group and unskilled (migrants plus native born) are the Majority

Post Shock—Skilled migrants are the largest sub group and Skilled (migrants plus native born) are the Majority
EFFECTS

Number of Skilled Migrants: Up
Number of Unskilled Migrants: Down
Income of Unskilled Native Born: Up
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Income of Skilled Migrants: Up
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Wage: Down
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Social Benefit: Down
Tax Rate: Down
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Findings

The number of migrants ($m_S$) rose sharply from 0.14 to 1.11. The skilled constitute now the majority: $x_S + m_S > x_U + m_U$. As predicted, the political-economy tax-transfer policy becomes now regressive: $t$ and $b$ are negative. Also, the skilled migrants form the larger of the two skilled sub-groups, (i.e. $m_S > x_S$) and their most-preferred tax-transfer becomes now the political-equilibrium tax-transfer policy.
Findings

Furthermore, as can be seen from the second row of Table 3, the politically dominant sub-group of skilled migrants drives out all unskilled migrants \( m_U = 0 \), by according their zero income \( I^M_U = 0 \). Noteworthy, the unskilled native-born were initially the politically dominant sub-group and dictated their most-preferred progressive tax-transfer. Following the supply-side stock of skilled migration, the unskilled native-born lose their dominance to the skilled migrants who are now dictating their most-preferred regressive tax-transfer policy. Nevertheless, the unskilled native-born are better off, because the return to their capital income (namely, \( r \)) rises sharply from 1.55 to 2.94 (because of the differential consumption and ...)
Immigration improve standard of living while downscaling the welfare state!

Large scale Skilled Immigration is a boon to everybody except for the unskilled migrants who have no capital income!
Thank You!
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The number of migrants \((m_S)\) rose sharply from 0.14 to 1.11. The skilled constitute now the majority: \(x_S + m_S > x_U + m_U\). As predicted, the political-economy tax-transfer policy becomes now regressive: \(t\) and \(b\) are negative. Also, the skilled migrants form the larger of the two skilled sub-groups, (i.e. \(m_S > x_S\)) and their most-preferred tax-transfer becomes now the political-equilibrium tax-transfer policy.
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Thank You!
Israel’s Free migration, based on the Law of Return, Is Unique!
Immigration and Income Redistribution: The US Experience

“At the beginning of the 20th century, millions of impoverished immigrants, mostly Catholic and Jewish, entered an overwhelmingly Protestant country. It was only when that demographic transformation was suspended by the 1924 Immigration Act that majorities of Americans proved willing to vote for many liberal policies. In 1965, Congress once more allowed large scale immigration to the United States—and it is no accident that this date coincides with increwasingly conservative backlash against liberalism itself, now that its spoils would have widely distributed among nonwhites.”

Rick Perlstein, NYTimes, April 11, 2017.
### Historical Migration Waves

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Migration Wave as a “Natural Experiment”

Immigration to the pre-state Palestine and to the State of Israel came in waves. Immigration at times, especially in the nascent statewood, and in the last wave from the Former Soviet Union (FSU) amounted to about 20 percent of the established population.
The 1990s Immigration of the Soviet Jews

Akin to a positive “Supply-side shock” of skill migration into Israel. It underpinned the eradication of inflation and the emergence of the high-tech sector. It was also correlated with a sharp rise in disposable income inequality.
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Voting turnout pattern of Soviet-Jew Immigrants

Voting turnout patterns of Soviet-Jew immigrants to Israel in the 2001 elections, conducted by Arian and Shamir (2002) find no marked difference in the voting turnout rates between these new immigrants and the established population.
## Immigrants’ Educational Characteristics

<table>
<thead>
<tr>
<th></th>
<th>Immigrants from the FSU</th>
<th>National Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share in Total Population (%)</td>
<td>14.5</td>
<td>100</td>
</tr>
<tr>
<td>Household Size (numbers of standard persons)</td>
<td>2.32</td>
<td>2.74</td>
</tr>
<tr>
<td>Schooling Years Of Head of Household (no.)</td>
<td>14</td>
<td>13.3</td>
</tr>
<tr>
<td>Head of household with a bachelor degree (%)</td>
<td>41.1</td>
<td>29.5</td>
</tr>
<tr>
<td>gross monthly labor income per standard person (2011 NIS)</td>
<td>4,351</td>
<td>4,139</td>
</tr>
</tbody>
</table>
Disposable Income Inequality in Israel and Several EU-15 Countries, 1973-2013
Redistribution in Post Soviet-Jew Immigration Wave


Source: Momi Dahan (2017)
Immigrants’ Academic Characteristics

Even more striking is the percentage of the head of the household with a bachelor degree: 41.1% among the new immigrants, compared to a national average of just 29.5%.
Free Migration: Unique to Israel

Israel’s Law of Return not only enabled free immigration but also grants these immigrants immediate citizenship, and naturally voting rights.
Disposable income inequality

Disposable income inequality in Israel, which was roughly stable until the beginning of the 1990s, took a sharp rising trend thereafter, even though no such change occurs with respect to the market-triggered inequality. Interestingly, the upward shift in disposable income inequality occurs following the start of the immigration from the FSU. In this paper we provide a political economy explanation of how the immigration can cause such a shift in disposable income inequality.
Political-Economic Model: Explaining Soviet-Jew Migration Effect on Income Redistribution

There are just two types of workers: “skilled” (with a symbol $S$).

The wage per unit of labor of a skilled worker is $w$, whereas an unskilled worker earns a wage of $\rho w$ per unit of labor, where $\rho < 1$. All native-born (with a symbol $N$) are initially unskilled. and “unskilled” (with the symbol $U$).
Cost of education

But, a native-born 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. we normalize the number of native-born individuals to 1
Individual identity

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 \([0, \bar{c}]\).
Initial endowment

- All native-born individuals are endowed with $E$ units of composite good, the single good in this economy. All individual inelastically supply one unit of labor. If a $c$-individual acquires education and becomes skilled, her income is (denoted by $I_s^n$).
- One can also consider the case in which $I$ is negatively correlated with $\bar{c}$.
- Note that this specification assumes that capital does not depreciate at all.
Income groups and cost of education

\[ l^N_S(0) = \frac{1}{1-t}w + b + E(1+r) \]

\[ l^N_S(c^*) = \frac{1}{1-t}wp + b + (E-c^*)(1+r) = l^N_U \]

\[ l^M_S = (1-t)w + b \]

\[ l^M_U = l^N_U - E(1+r) \]
The income of a skilled migrant is $I^M_S = (1 - t)w + b$, 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 $I^N_S(c) > I^M_S$. But if $E - c < 0$ (i.e. the individual borrows in order to invest in human capital), then the income of the skilled migrant ($I^M_S$) is greater than the income of the skilled native-born ($I^N_S$).
Income and cost of education

\[ I_s^0(0) = (1 - t)w + b + E(1 + r) \]

\[ I_s^0(c^*) = (1 - t)w + b + (E - c^*)(1 + r) = I_u^m \]

\[ I_s^m = (1 - t)w + b \]

\[ I_u^m = I_u^m - E(1 + r) \]
Ranking of Income Groups

In sum, we have the following ranking of incomes:

\[ I_U^M < I_U^N = I_S^N (c = c^*) < I_S^N (c > E) < I_S^N (c = E) = I_S^M < I_S^N (c < E). \]
Income Rankings

The income of an unskilled migrant which is \((1 - t)\rho w + b\) is definitely below the income of an unskilled native-born, the difference being the capital income enjoyed by the unskilled native-born, namely \(E(1 + r)\). The income of a skilled migrant is definitely higher than the income of the unskilled migrant, because of the higher wage of the skilled, whereas both have no other income. But it is not a priori clear whether the income of the skilled migrants falls short of or exceeds the income of the native-born.
The income of the native-born as a function of $c$

The income of the native-born as a function of $c$ is depicted in Figure 1. Note that $I^*_n(c)$ declines in a straight line until it reaches $c^*$

$$I^*_n(c^*) = (1 - t)w + b + (E - c^*)(1 + r)$$
Income of Native born

Note that the income of the native-born unskilled \((I_u^u)\) is equal to the native-born \(c^*\)-individual (namely, that native-born individual who is just indifferent between acquiring education). The income of the \(c^*\)-individual is \((1 - t)w + b + (E - c^*)(1 + r)\). The income of a skilled migrant is just \(I_s^m = (1 - tw + b)\). Hence, as long as \(E - c^*\) is positive (i.e. the \(c^*\)-individual does not borrow in order to invest in human capital), then \(I_u^m > I_s^m\). But if \(E - c^* < 0\) (i.e. the individual borrow in order to invest in human capital), then the income of the skilled migrant \((I_s^m)\) is greater than the income of the unskilled native-born \((I_u^m)\) and, by continuity, \(I_s^m\) is also greater than the income of the skilled migrant \((I_s^m)\) of all native-born \(c^*\)-individuals.
Supply of Migrants

\[ m_s = B_s (I^m_s)^{\sigma_s} \]

\[ m_u = B_u (I^m_u)^{\sigma_u} \]
Supply Side Block

\[ Y = AK^\alpha L^{1-\alpha}, \quad A > 0, 0 < \alpha < 1 \]

\[ L = n_s + \rho n_u + m_s + \rho m_u \]

\[ w = (1 - \alpha)A\left(\frac{K}{L}\right)^\alpha \]

\[ r = \alpha A\left(\frac{K}{L}\right)^{1-\alpha} \]
The 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 $b$.

$$twL = b(1 + m_S + m_U)$$
Progressive and regressive systems

Note that it follows from government budget constraint 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 subsidy to wages (namely, a negative $t$) requires the government to impose a lump-sum tax (namely, a negative $b$) on all. When $t$ and $b$ are positive, the tax-transfer system is progressive. When they are negative, the system is regressive.
Policy setup

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

$w, b, r, c^*, I^M_S, I^M_U, n_S,$

$n_U, I^N_S, m_S, m_U, H, K,$

$Y, L.$

There are also 15 equations in the model – (2)-(9) and (10)-(16) from which the endogenous variables get solved
majority voting

The policy variable is chosen by some natural and plausible version of a majority voting:

Start with a benchmark case, and suppose $B_S = B_U = 0$, so that there is no migration. In this case the political equilibrium is rather straightforward. If a $c_0$-individual would like to raise $t$, then all $c$-individuals with $c \geq c_0$ (whether skilled or unskilled) would certainly support such a move. This means that the distribution of the voters over the most preferred $t$ is single-peaked. Hence, the $t$ that will be chosen in equilibrium is the median voter’s most preferred $t$. 
equilibrium $t$

If $c^* < \frac{\bar{c}}{2}$, then the median voter is an unskilled native-born (for $\rho$ sufficiently large, this will indeed be the case), then the equilibrium $t$ will be at the (endogenously determined) Laffer point.

Upon observation, we can see from equations (2) and (3) that the direct effect of the tax-transfer policy on the incomes of the unskilled native-born and the unskilled migrants is the same, and works through the net wage income $(1 - t)\rho w + b$. For the unskilled migrant this is the only effect of the tax-transfer system. However, for unskilled native-born, there is also an indirect effect through capital income $E(1 + r)$ (note that $r$
First Order Effect

Similarly, the direct effect of the tax-transfer policy on the incomes of the skilled native-born and the skilled migrants 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 the skilled native-born (but not on the income of the skilled migrants) through the capital income \((E - c)(1 + r)\). Here again the indirect effect is of second-order magnitude.
The Migration Supply shock

We now keep all other parameter values constant and increase the parameter value of $B_S$. This supply-side shock triggers a wave of skilled migration.
## The Effect of a Supply Shock of Skilled Migration

<table>
<thead>
<tr>
<th></th>
<th>$m_U$</th>
<th>$m_S$</th>
<th>$x_U$</th>
<th>$x_Y$</th>
<th>$I_U^N$</th>
<th>$I_U^M$</th>
<th>$w$</th>
<th>$r$</th>
<th>$t$</th>
<th>$\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unskilled Majority</strong> (Unskilled Native-Born the Larger Sub-Group) Parameter Value of $B_s = 1.2$</td>
<td>0.89</td>
<td>0.14</td>
<td>0.97</td>
<td>0.03</td>
<td>0.194</td>
<td>0.063</td>
<td>0.312</td>
<td>1.55</td>
<td>0.32</td>
<td>0.03</td>
</tr>
<tr>
<td><strong>Skilled Majority</strong> (Skilled Migrants the Larger Sub-Group) Parameter Value of $B_s = 8.2$</td>
<td>0</td>
<td>1.11</td>
<td>0.97</td>
<td>0.03</td>
<td>0.202</td>
<td>0</td>
<td>0.228</td>
<td>2.94</td>
<td>-0.41</td>
<td>-0.06</td>
</tr>
</tbody>
</table>
findings

The number of migrants ($m_S$) rose sharply from 0.14 to 1.11. The skilled constitute now the majority: $x_S + m_S > x_U + m_U$. As predicted, the political-economy tax-transfer policy becomes now regressive: $t$ and $b$ are negative. Also, the skilled migrants form the larger of the two skilled sub-groups, (i.e. $m_S > x_S$) and their most-preferred tax-transfer becomes now the political-equilibrium tax-transfer policy.
findings

Furthermore, as can be seen from the second row of Table 3, the politically dominant sub-group of skilled migrants drives out all unskilled migrants \((m_U = 0)\), by according their zero income \((I_U^M = 0)\). Noteworthy, the unskilled native-born were initially the politically dominant sub-group and dictated their most-preferred progressive tax-transfer. Following the supply-side stock of skilled migration, the unskilled native-born lose their dominance to the skilled migrants who are now dictating their most-preferred regressive tax-transfer policy. Nevertheless, the unskilled native-born are better off, because the return to their capital income (namely, \(r\)) rises sharply from 1.55 to 2.24 (in units of the all-native-borne national wealth).
Chapter 7: FDI and the Information-Technology Surge
Role of Foreign direct investment

Innovation requires scale, and scale require trade. An isolated small economy cannot be a center of innovation. The incentives of entrepreneurs to invest effort and resources in generating valuable services are related to the ability to use the resulting knowledge repeatedly, on a large scale, over time. Foreign direct investment provides critical incentives to be able to use scale economies, so as to leap from the precarious innovation stage at the confined of a small economy to the execution stage, by utilizing the world markets. The globalization of an economy is crucial for its nascent high-tech industry to develop, and flourish.
2000-2015 GDP per hour work (constant 2010 prices)
Israeli High-Tech Venture Capital Fund Raising (right axis, Million, current US dollars) and Inward Foreign Direct Investments (left axis, Million, current US dollars)
Gross domestic spending on R&D, Total, % of GDP, 1981-2014: Israel and OECD average

Source: OECD Data.
Foreign direct investment: Inward flows, annual, 1980-2013 (percentage of Gross Domestic Product)
# Israel's Labor Productivity (annual percentage changes)

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Private Sector: Total</strong></td>
<td>1.5 (1,399)</td>
<td>3.5 (1,559)</td>
<td>1.5</td>
<td>1.2 (2,057)</td>
</tr>
<tr>
<td><strong>Information Technology Sector</strong></td>
<td>1.1 (71)</td>
<td>10.2 (126)</td>
<td>3.4</td>
<td>1.7 (176)</td>
</tr>
<tr>
<td><strong>Information Technology (excluding electronics)</strong></td>
<td>3.1 (35)</td>
<td>11.6 (38)</td>
<td>6.0</td>
<td>3.3 (38)</td>
</tr>
<tr>
<td><strong>IT Services</strong></td>
<td>-3.6 (26)</td>
<td>5.7 (71)</td>
<td>1.7</td>
<td>-0.4 (112)</td>
</tr>
</tbody>
</table>
Thank You!