Modernizing the tax system

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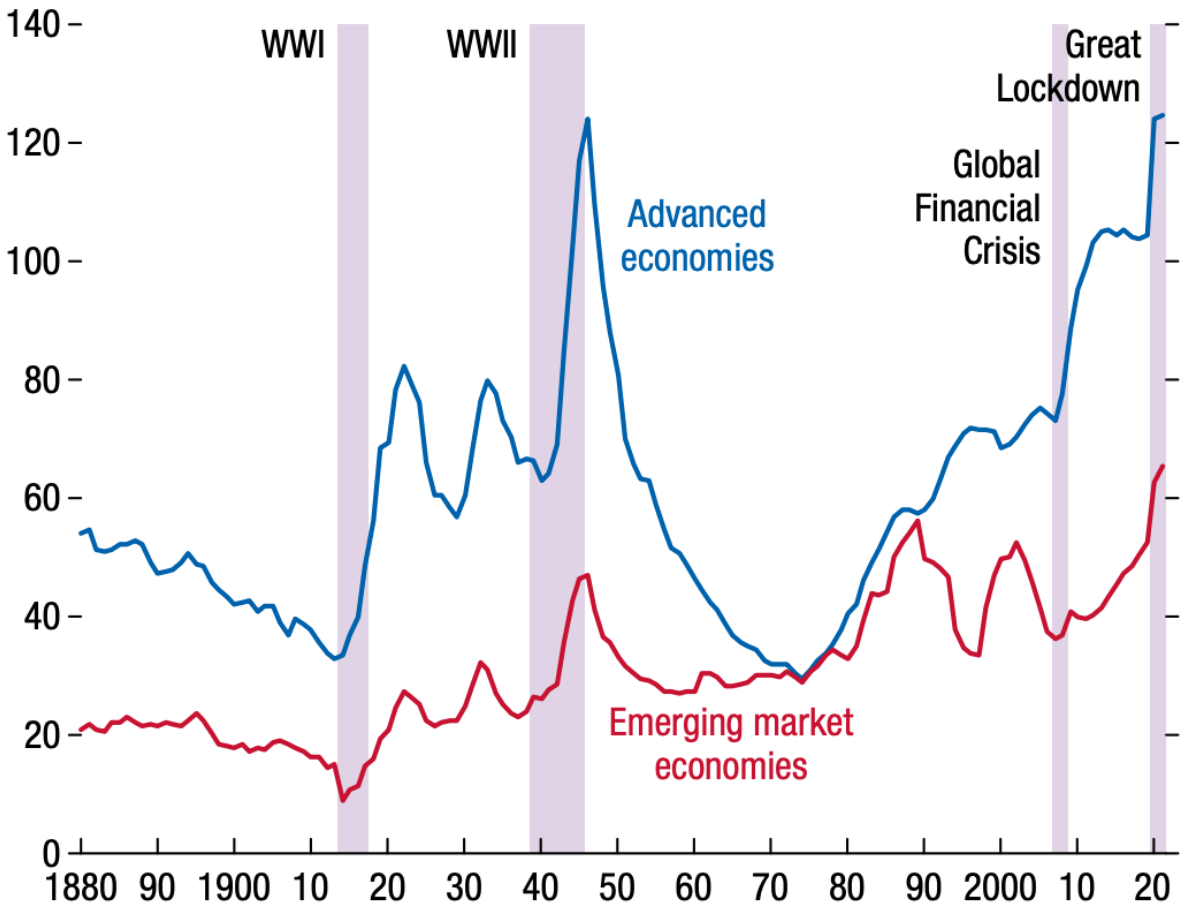
Motivation: a crucial time for public finances

1. The impact of COVID-19 on public finances is unprecedented.
   In many countries, ratios of government debt to GDP will reach all-time highs.
2. Moreover, the commitment to the Paris Agreement implies shifting public expenditures to the green transition in the near future.
3. The time has come for a serious look at public finances, particularly the tax system
4. Taxation is based on following the money, i.e. payments. In our view, not enough attention has been paid to the payment system in the academic literature

Motivation: a crucial time for public finances

Figure: Global debt to GDP



(Source: IIF [2020]).

The existing tax system

1. Our fiscal system is archaic: results from the sedimentation of centuries of taxes, shaped by lobbying for exemptions and avoidance strategies.
2. Tax collection is costly.
   In the UK: 1.5 % for income tax, 1.3 % for capital tax (IFS [2010]).
   In Switzerland: 2-4 % for VAT (NZZ [2021])
3. Huge distortions due to high tax rates on labor, consumption and investment.
4. Lobbying against/political resistance to taxing wealth and inheritance.
5. Social demand for a simpler, cheaper and fairer fiscal system.
6. Newly introduced Financial Transactions Taxes (FTT) generates little revenue: too many exemptions, too difficult to define the tax base, therefore easy to avoid and difficult to extend.

The tax of the 21st century

- Feige's idea: tax the economic activity that has increased the most in the last 60 years: payments (Feige [2000])
- Volumes of payments in advanced economies are now more than 100 times GDP.
- Note that it is a logarithmic scale !

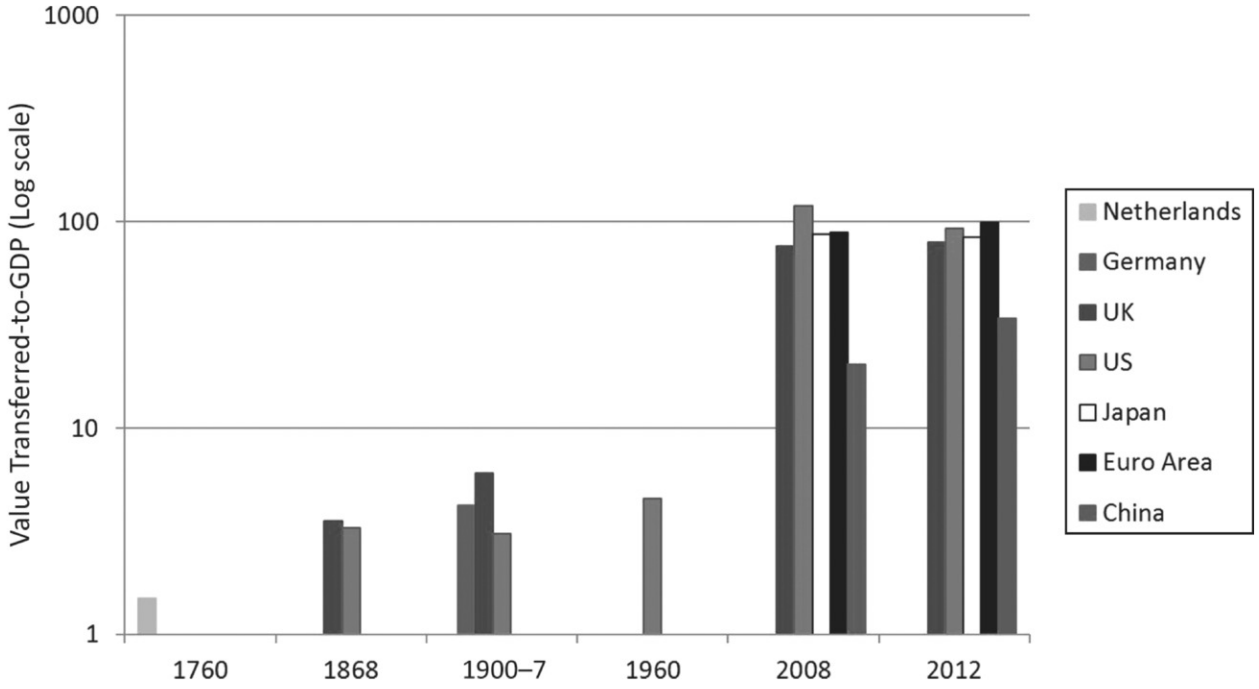


Figure: Source: Kahn et al. [2014]

Black box payment data

Payment data is scarce and incomplete.

1. Wholesale payments
   - Lack of disaggegated data for wholesale payments $\sim$ 80 – 100 GDP.
2. Retail payments
   - We have detailed information about retail payment volume $\sim$ 10 GDP.
3. FX payments not included
   - Global yearly FX volume $\sim$ 20 * global GDP.
   - Lack of disaggegated data by currency and country.
4. Internalized payments not included
   - Data on payments which never go through the RTGS-system.
   - Internalized payments are still transfers between bank accounts

The payment tax: how would it work? 1

- Tax base: all transfers between bank accounts of tax payers (individuals and firms).
- Also includes transfers between reserve accounts of commercial banks at the central bank (monetary policy related operations and inter-bank loans would be exempt).
- Small tax rate: 20 to 30 bps
  $\Rightarrow$ a payment of 100 EUR generates a tax of 20 - 30 cent

The payment tax: how would it work?

- A payment tax of 20 bp, assuming that it reduces by half the tax base, would still collect 10% of GDP (100 times more than existing FTT),
- Simple to implement: two lines of code in the deposits management programs of banks.
- Cheap to collect, transparent.
- Same rate for all payments, no exemptions, no lobbying, no avoidance.

Impact of a Payment Tax: households

- A household who spends its entire revenue R would be taxed as it comes in the current account and as it leaves it: the tax base is $2R$
- For a tax rate of 20bp, the tax paid is $0,4\%R$, hardly noticeable
- Households who hold an investment portfolio and manage it actively would pay more.
- For a household who holds a portfolio of $20R$ and turns it over once a year the tax base would be $42R$ and the tax $8,4\%R$
- A passive management, with less frequent turnover, would reduce the tax

Impact of a Payment Tax: firms

- *Non-financial firms*. Let T be the turnover and m the profit margin, so that revenue is $R = mT$. The tax base is roughly $2T = 2R/m$, so profit becomes $mT - 2tmT$ where t is the tax rate
- Margin is reduced by $2t$: for $t = 0,2\%$ the profit margin is reduced by $0,4\%$. The tax impacts most low-margin firms
- *Financial firms* Tax impacts most activities that consume a lot of payments (HFT)
- Bottom line: It would generate less distortions than existing taxes on labor, consumption and investment. Could in fact be accompanied by a reduction of taxes on labor or consumption.

International Experience

- **Colombia** has a tax on non cash payments since 1998: current rate 30 BP; revenue about one percent GDP: interbank payments exempt.
- Project of a popular initiative in **Switzerland**:
  - all non cash payments;
  - would replace VAT, federal income tax and the stamp duty (FTT).
  - maximum of 50 bps.

Trading costs and elasticities

Trading cost: $\sim 40 - 85$ bps

1. Virtu [2020] finds average trading costs in Europe of 40 bps.
2. Abdi and Ranaldo [2017], Eaton et al. [2020] find average implicit trading costs measured by the effective spread of 84 bps and 70 bps, respectively.

FTT impact on volume:

1. Colliard and Hoffmann [2017] finds a 20 bps FTT introduction in France reduces volume by 10% - 20%. Wolff [2018] find additional 10 bps increase of STT in France has no effect on volume.
2. For theoretical reasons, elasticity should be $>$ -1.

A theoretical approach

We build a simple model of liquidity management to assess the elasticity of the tax base and estimate the tax collected.
A firm holds a checking account m_t and an investment account x_t.

1. Transfers y_t can be made from one to the other, but there is a proportional transaction cost $\tau > 0$.
2. There must always be enough cash at hand to pay operating expenses: $m_t \geq 0$
3. The investment account accrues at the fixed rate r while the money account is stochastic with mean 0 and volatility σ

The impact of a tax on payments

Suppose there is a transaction cost τ and a payment tax τ' is imposed on top of that. For the treasurer, this amounts to increasing the transaction cost to $\tau + \tau'$ The volume of transactions decreases from V to V', with:

$$V' = \sigma^2 \sqrt{\frac{r}{\tau + \tau'}} = V \sqrt{\frac{\tau}{\tau + \tau'}}$$

and the tax collected is:

$$P' = \sigma^2 \sqrt{\frac{r\tau'}{1 + \frac{\tau}{\tau'}}} = P \sqrt{\frac{\tau'}{\tau} \frac{1}{1 + \frac{\tau'}{\tau}}}$$

Example 1

Double the transaction cost: $\tau' = \tau$. Then $V' = 0,7V$ and $P' = 0,7P$. The volume of transfers is reduced by 30%, and the treasurer pays 40% more than before, half in transaction costs and half in tax.

Open questions and future work

1. We need more data on payments, especially wholesale payments.
2. We need an equilibrium model to assess the distortionary aspects of taxation and find the right place for a tax on payments.
3. We need to study the interbank market in order to study the effect of a tax in a situation where banks hold large amounts of reserves.

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The model

A company holds a checking account m_t and an investment account x_t. Transfers y_t can be made from one to the other, but there is a proportional transaction cost $\tau > 0$. Dynamics are:

$$dm_t = \sigma dZ_t + dy_t - \tau |dy_t|. \tag{1}$$

$$dx_t = rx_t dt - dy_t \tag{2}$$

where Z_t is Brownian motion and $\sigma > 0$. As money from operations comes into the (non-renumerated) checking account, the treasurer moves it to the investment account in order to maximise

$$\mathbb{E}[e^{-rT}(m_T + x_T)]$$

where T is termination time. It is assumed that T is a stationary Poisson process with intensity δ: the probability of the treasurer handing in his account between t and $t + dt$ is λdt

The liquidity problem

There must always be enough cash at hand to pay operating expenses:

$$m_t \geq 0$$

- If $\tau = 0$ (no transaction cost) the treasurer keeps $m_t = 0$ and shifts money from the investment account as needed
- If $\tau = \infty$ (very high transaction cost), the treasurer keeps her cash handy and hopes for the best
- In the intermediate case, there will be some maximum level of cash m^* above which the treasurer transfers the excess to the investment account: $0 \leq m_t \leq m^*$
- We are thinking of very low $\tau > 0$

The solution

For *very low tax rate* we have

$$m^* \simeq \sigma \sqrt{\frac{\tau}{r}}$$

The average volume of transfers per time unit is

$$V \simeq \sigma^2 \sqrt{\frac{r}{\tau}}$$

and the average amount paid in transaction costs is

$$P = \sigma^2 \sqrt{\frac{r}{\tau}} \times \tau = 2\sigma\sqrt{r\tau}$$