Session Number: Poster Session II
Time: THURSDAY, AUGUST 28, LATE AFTERNOON

Paper Prepared for the30th General Conference of
The International Association for Research in Income and Wealth

Portoroz, Slovenia, August 24-30, 2008

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Households savings and firms'investments: implications for economic growth

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June 18, 2008

Abstract

Over the last decade small and medium enterprizes (SMEs) development has emerged as a major issue in the Italian political economy, since they play an important role in the annual growth rate. However the Italian economy still lacks of a bold attempt to reduce the SME equity funding gap. Moreover households' portfolio choices should be better coordinated to the demand for investments from local firms. Even though in Italy there is a high number of small firms that could be potentially listed, only a small percentage is present in the stock exchange. Providing Italian small and medium enterprizes with a wider funding market, would support the development of their growth, spreading the benefits over the national economy. In this article, we analyze the effect of sectoral-specific increases in SME equity funding, through stock market listing. The results show that this increase would boost the national economic growth, raising the level of investment. The analysis applies a general computable equilibrium model, using 2000 Input Output (IO) Table. The IO has been integrated with the Bank of Italy Survey of Household Income and Wealth(2000) to obtain the Italian Social Accounting Matrix for 2000.

J.E.L. Classification: H54, G32, G10, O16, O32, O41, E17

Keywords: SME, stock exchange market, listing, financial resources, innovation, economic growth, financial stability.

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1 Introduction

The purpose of this paper is to estimate the macroeconomic effects caused by an increase in the number of Italian small and medium size enterprizes (SMEs), listed in the national stock exchange, using a financial general equilibrium model. Financial decisions are important for the good performance of a firm, mainly during a phase of innovative investments. Equity resources are essential to facilitate new direction in the firm's development over long time horizons, while debt resources are more suitable to cover short term activities. In order to strengthen its growth path, a firm should adopt optimized strategies, both in terms of product innovation and in terms of financial resources. However, Italian firms are still not full aware of the distinction between these two forms of financial resources and they mainly tailor their investments to short term liabilities.

The Italian economy is characterized by a high presence of SMEs, mainly of micro size[1], which are often in difficult financial conditions, since they have to cope with local credit rationing. Due to their reduced bargaining power, Italian SMEs have to cope with a high cost of funding. This situation might seriously threaten the success of investments in italian small firms, which could be innovative and relevant for the stability of national growth. Since SMEs do not have many other alternative resources and they often raise their financial resources at a local level, their main financial channel is the bank loan. However banks usually prefer to finance enterprizes that can offer high guarantees.

Figures published by Capitalia[2], show that there is a positive relationship between firms' size, in terms of number of workers, and accessibility to banks' loans. Large firms can easily access to credit lines as well as to international stock markets and intermediaries. To prevent small innovative enterprizes from failure, due to the local market credit rationing, the authorities should intervene providing access to alternative resources, promoting the role of the stock market as source of equity. This would allow banks and firms to overcome the risk-innovation trade-off, which threatens the attitude towards growth underlying the system.

The credit rationing of Italian SMEs is accrued by their low propensity towards stock listing: the reason of this low propensity could be the dominance of family business and self-financing enterprizes[3]. A comparison of Italian figures with those of other countries, for example the United Kingdom, reveals the lack of SMEs in the national stock exchange. In 2005 the World Federation of Exchange registered 282 companies

[1] Appendix A, Table 1 - European SMEs statistics I

[2] Appendix A, Table 6 - Average number of credit lines by size in 2000

[3] Tarantini [2004]

listed in the Italian main market, with only 18 enterprizes in the SMEs stock market, against a total of 3.091 of listed companies in London Stock Exchange (LSE), and 1.179 in SMEs sector[4].

The recent merger between the LSE and the Italian national stock exchange can be a first step towards the development of private stock markets as Multilateral Trading Facilities (Mtf), which are autonomous markets often managed by the same stock market company. Their more simplified structure could guarantee a higher accessibility both to small firms and to small private investors since most of the institutional constraints, valid for the national stock exchange, are absent. At an european level most of the recent stock listing have occurred through this form and the most important market of this type is the Alternative Investment Market (Aim) managed by LSE[5].

This article aims to evaluate the social opportunity cost deriving from the delay in these institutional innovations, as a missed chance of positive impact on the macroeconomic variables. The general equilibrium model is the most convenient tool to evaluate and foresee the possible impact of economic policies adopted to enable a higher number of SMEs to be listed in the Italian stock market.

The purpose of this study is to shed lights on the implications for growth deriving from a change in the proportion of equity floating in the system. These implications are observed both for households' preferences and for firms'decisions.

The article is structured in four parts. The first section highlights the main changes pursued by the Italian government during the last decades and the structure of the economic system. The second part introduces the overall structure of the general equilibrium model used for the purpose of our analysis. Finally, we shed light on the results, reporting the economic causalities generated by the simulated policy.

2 Structure of the Italian economy

In the last decades, the Italian economy has gone through some important facts as:

- the afterwards of Italian Lira devaluation hold in 1992, which has released an increase in Italian firms competitiveness in the world market;
- the European process of integration, which has cleared a path towards network connections in strategic

[4]Appendix A, Table 2 - European SMEs statistics II

[5]Fumagalli [2008]

sectors (as energy, credit, insurance, telecommunications). However, this has also required more restrictive fiscal policies which have slowed down the pace for public investments to fulfill the Maastricht and Stability Pact requirements;

- the development of the new-economy, combined with the spread of technology, information and the financial market globalization;
- the financial frauds which involved some Italian groups, where many private investors lost their savings without being alerted about the risky nature of their investments.

The high presence of a significant number of small and medium enterprizes provides evidence for potential growth in the Italian economy. Given their flexible and dynamic set, SMEs have a significant role both in terms of employment and value added performance[6]. However, they have a high risk-profile since the survival rate after the second year is around 70% [7]. This figure is mainly linked to the SMEs' concentration in traditional activities, rather than in high-tech ones. Given the growing competition of many new developing countries in traditional sectors, Italian SMEs should keep enforcing their competitive strategies through technology differentiation.

Even though the Italian stock exchange provides renewed compartments for SMEs listing, its capitalization is still at a low level if compared with other markets. Pellizzoni [2002] measures the percentage of firms that could fulfill the requirements for listing, estimating an additional contribution of 200 Billions of Euros for 2001. Following some specific criteria, the author estimated that one company over sixteen could fulfill the stock market requirements.

In this paper, we try to estimate the possible macroeconomic consequences if this sample of firms happens to be included in the stock market. In particular, we assume a positive shock, differentiated by sector, as in Pellizzoni [2002], on SMEs equity funding to simulate the potential benefit in terms of stock market capitalization. We then focus on the effect on macroeconomic variables in order to stress that this measure would spread its benefits over national economic indices, justifying a need for an institutional intervention.

As previously said, the difficulties in SMEs access to equity have also a cultural aspect. The structure of the Italian economy is mainly based on family-owned enterprizes: who runs a family business is usually

[6] Appendix A, Table 4 - Italian SMEs statistics 2000

[7] Eurostat

reluctant to share the information, about the firm's performance, with a public of investors. This explains why the Italian financial structure is mainly under the control of bank groups.

It is well known that the development of a financial system, which provides flexibility and rapidity in matching financial demand and supply, can support the growth both for a single firm and for the whole economy. The main debate in this context comes from the distinction between bank and market oriented systems. For those who support the first approach, banks have a role of growth promoters since they address resources only through projects' monitoring and risk management, while in a market oriented system information asymmetry increases. Vice versa, for those who support a market oriented system, the listing on the stock market can favor the competition between firms and therefore boost innovation. The central role of the markets would imply also a higher level of transparency on company's information.

Recently the literature[8] has introduced two new approaches: financial services view, which tries to combine the two systems, finding positive synergies from this combination; law and financial view, which gives much more importance to the comparison between the legal system of different countries. This debate has driven to three interesting conclusions:

- the increase of the country's wealth leads the national financial system to become market-oriented;
- the financial stability and development accelerates the economic growth, supporting the growth of new firms;
- the financial structure is not sufficient to justify the growth differentials between countries.

Authorities have the important task of ensuring a system which guarantees information transparency and investors' protection. It is necessary to improve the complementarities between the bank system and the market, trough institutional changes, in order to ensure long term growth. Indeed this is what the results of our model shows: in a world where both stock markets and banks interact and where investors address their savings both to deposits and securities, there is evidence for patterns of intensive growth.

The institutional intervention must be directed to increase households'preferences towards portfolio investments in a way that firms can have a more flexible access to financial resources. Since small firms require simple rules and short terms for stock listing, their propensity should be incentivated by policies which aim to higher competition, privatization and self-regulation of stock markets.

[8]Demirg-Kunt and Levine [2001]

3 The financial computable general equilibrium model structure

While there exists a wide literature on real CGE modeling, few works integrate real and financial variables involved in households, government and firms choices. Most of this literature developed in this context, follows the Keynesian approach [Taylor, 1990] since it is more difficult to conjugate real and financial variables within the Walrasian framework.

The first one, also called the structuralist-macro approach, is based on macro variables identities derived from national accounts. The Walrasian (or neoclassical) paradigm bases its analysis on neoclassical real trade theory. This implies that the main focus is on the impacts on the real side of the economy.Robinson asserts that the Keynesian approach is more suitable for stabilization programs analysis, while the second is more applicable for structural adjustment issues, which involves also real side changes.

With respect to the first approach the pioneering work is Rosenzweig and Taylor [1990]. We can find other examples in Fargeix and Sadoulet [1994] and in Lewis [1994]. In both cases the model is based on IS-LM framework, investigating on the correct mix of policies to induce an effective structural adjustment.

An application following the second approach is given in Wiebelt [2004], where the agent's financial choices are modeled as a maximization problem of an additive objective function of all assets, subject to a certain level of return. In this paper we take some elements of household portfolio choice from Rosenzweig and Taylor [1990], where the authors introduce an utility measure of household portfolio, without uncertainty.

The innovation of this work is to simulate a policy regarding the financial side keeping trace of the Walrasian paradigm. Differently from previous models, we look more in detail to portfolio choices for households and firms. Future extension of this model could consider how the intervention of financial intermediaries can facilitate the interchanges between these two entities, and how the uncertainty issue can be controlled.

In this analysis we apply a multi-sector general equilibrium model to measure the impact of policies on sector-level economic variables (on the production side), with three income classes (on the consumption side). The background framework of this methodology is the Walrasian approach, where the equilibrium benchmark dataset comes from the solution of a system of equations (first order derivatives and clearing conditions). We assume a rational behavior for all economic agents.

In particular, the model consists of thirty-three sectors obtained by the aggregation of 2000 Input Output Table (National Institute of Statistics). Since each sector produces a unique product in a context of perfect competition, firms take prices as given.

There are two factors of production: labor (L) and capital (K). We hypothesize perfect mobility for labor force. There is no unemployment, which means that those who are unemployed are not searching for a job. Conversely, since capital does not circulate with perfect mobility, its rent differs for every sector.

There are three households classes, obtained by dividing the national community on the base of the net equivalent disposable income. The sample, selected for Bank of Italy Survey of Household Income and Wealth in 2000, has been classified creating three income classes, and the resulting three percentages have been projected to divide the households' income and consumption in the Social Accounting Matrix.

In the model we try intuitively to reproduce the path that a positive shock on SMEs stock market listing could produce, both in terms of households' and firms' choices:

- the higher availability of equity release a higher level of investments on the SMEs side;
- a higher portion of investments improves the return on equity;
- households are induced to hold a higher share of their portfolio in equity of companies listed in the stock exchange;
- the matching between savings decisions of households and investments decisions of firms improves, with benefits for the overall system.

In this section we depict the behavioral choices of the agents involved in these interactions.

3.1 Households

3.1.1 Consumption

Household preferences are described by a CES (constant elasticity of substitution) function. We adopt a model with three household classes (h), considering their net disposable income level. Every consumer can choose the level of commodities that maximizes his utility, corresponding to the households consumption, given two budget constraints which define the income level and the saving propensity:

$$\max_{Xd_{h_i}} C_h = \{\sum_i \alpha_h X d_{h_i}^{-\rho}\}^{-\frac{1}{\rho}}$$

s.t.

$$\begin{aligned} Y_h = &\quad (1-\tau-\tau_{cs})(wL_i^d + PENS) + (1-\tau)\sum_i r_{E_i}E_i + (1-\tau)r_D(D + caprow) + (1-\tau)r_T T \\ P_c C_h = &\quad (1-s)Y_h = \sum_i Ptax_i Xd_{h_i} \end{aligned}$$

C_h is the level of aggregated consumption over income classes, and P_c is the consumption price index, given by a weighted average of all commodities prices. The disposable income is net of tax on labor income and portfolio returns (τ) and social insurance contributions(τ_{cs}). For the second constraint, only a fraction (s) of disposable income is saved.

The optimal demand for the constrained maximum of C_h is:

$$Xd_{h_i}^* = (\alpha_{h_i})^\sigma \left(\frac{P_c}{Ptax_i}\right)^\sigma C_h$$

where $Ptax_i = P_i(1+\tau_{c_i})$ is the price which includes the taxes on consumption (VAT), and σ is the elasticity of substitution.

3.1.2 Financial wealth

Households can allocate their savings by investments over different types of assets. From the Bank of Italy Survey of Household Income and Wealth (2000), we can distinguish three main possibilities: equities (E_i), deposits(D) and government bonds(T). There is no perfect substitutability, therefore households normally diversify their portfolio depending on their welfare. Following Mrette et al. [2008], we ignore the uncertainty on returns modeling the wealth maximization problem through a CET (constant elasticity of transformation) function. Households maximize the return to their portfolio allocation diversified by types of assets and across sectors (with regard to equity). Let $\overline{rr}$ be the return to financial wealth (W), the optimization problem becomes:

$$\max_{E_i,D,T} \overline{rr}W = \sum_i r_{E_i}E_i + r_D D + r_T T$$

s.t.

$$W = \quad (\textstyle\sum_i \gamma_{1i} E_i^{\rho_w} + \gamma_2 D^{\rho_w} + \gamma_3 T^{\rho_w})^{\frac{1}{\rho_w}}$$

The optimal combination, which originates the supply of financial resources by households, is given by:

$$\begin{aligned} E_i^{s*} = &\quad (\gamma_{1i})^{-\sigma_w}(\tfrac{r_{E_i}}{\overline{rr}})^{\sigma_w} W \\ D^{s*} = &\quad (\gamma_2)^{-\sigma_w}(\tfrac{r_D}{\overline{rr}})^{\sigma_w} W \\ T^{s*} = &\quad (\gamma_3)^{-\sigma_w}(\tfrac{r_T}{\overline{rr}})^{\sigma_w} W \end{aligned}$$

where $\sigma_w \left(= \frac{1}{\rho_w - 1}\right)$ indicates the elasticity of transformation between assets.

3.2 Firms

3.2.1 Production

Each sector produces an homogeneous product with a two-stage production function. At a first stage, the value added CES function(VA_i) combines labor(L_i) with capital(K_i). The aggregated intermediate ($INTT_i$) is a CES function of all intermediate goods that sector i buys from sector j (INT_{ji}). At a second stage, value added and aggregate intermediate inputs are nested in a Cobb-Douglas output function (Xs_i). The optimal level of production is given by the solution of three optimization problems:

- First stage:

  Value Added

$$\min_{L_i, K_i} P_{va_i} VA_i = wL_i^d + rr_i K_i^d$$

  s.t.

$$VA_i = \quad \{\alpha_{VA_i}(L_i^d)^{-\rho_{VA_i}} + (1 - \alpha_{VA_i})(K_i^d)^{-\rho_{VA_i}}\}^{-\frac{1}{\rho_{VA_i}}}$$

  The optimal demand for labor and capital by sector are:

$$
\begin{aligned}
L_i^{d*} = &\quad (\alpha_{VA_i})^{\sigma_{VA_i}} \left(\frac{P_{VA_i}}{w}\right)^{\sigma_{VA_i}} VA_i \\
K_i^{d*} = &\quad (1-\alpha_{VA_i})^{\sigma_{VA_i}} \left(\frac{P_{VA_i}}{rr_i}\right)^{\sigma_{VA_i}} VA_i
\end{aligned}
$$

Intermediate inputs

$$
\min_{INT_{ji}} P_{INT_i} INTT_i = \sum_j Ptax_i INT_{ji}
$$

s.t.

$$
INTT_i = \quad \left\{\sum_j \alpha_{INT_{ji}} INT_j i^{-\rho_{INT_i}}\right\}^{-\frac{1}{\rho_{INT_i}}}
$$

where $j = i = 1, .., 33$. The optimal demand for intermediate input by sector is:

$$
INT_{ji}^* = \quad (\alpha_{INT_{ji}})^{\sigma_{INT_i}} \left(\frac{P_{INT_i}}{Ptax_j}\right)^{\sigma_{INT_i}} INTT_i
$$

- Second stage:

$$
\max_{VA_i, INTT_i} \pi_i = P_{d_i} Xs_i(1-\tau_{Pi}) - P_{va_i} VA_i - P_{INT_i} INTT_i
$$

s.t.

$$
Xs_i = \quad A_i VA_i^{\alpha_{Xs_i}} INTT_i^{(1-\alpha_{Xs_i})}
$$

Solving the first order conditions the results are:

$$
\begin{aligned}
VA_i^* = &\quad \alpha_{Xs_i} \left(\frac{P_{d_i}}{P_{VA_i}}\right) Xs_i(1-\tau_{p_i}) \\
INTT_i^* = &\quad (1-\alpha_{Xs_i}) \left(\frac{P_{d_i}}{P_{INT_i}}\right) Xs_i(1-\tau_{p_i})
\end{aligned}
$$

where τ_{p_i} is the tax on production, differentiated for each sector. At a second stage the production function takes the form of a Cobb-Douglas since it provides the property of independency between factor income shares and relative factor prices (as it is the case under perfect competition). This is a subcase of CES function, when ρ is equal to 0 which means that the elasticity of substitution, σ, equals 1.

The output price is given by P_{d_i}, while P_{VA_i} and P_{INT_i} are the implicit prices of aggregated value added and intermediate inputs.

The input costs (that in equilibrium equals the inputs marginal productivity) are the labor cost (w which does not change between sectors) and the cost of capital (rr_i which instead does vary between sectors). The return on capital invested is different for each sector, but we assume no perfect mobility for this factor otherwise all capital would flow towards sectors with higher profitability. Since in the real world we have some forms of attrition (taxes, asymmetric information, inefficient market), it reasonably holds that the cost of capital changes by sector. Therefore the context does not consider the capital structure irrelevance principle of Modigliani-Miller[9].

3.2.2 Investments

The amount of production not absorbed, either by households, government or firms, is employed as investment goods. The aggregated investments ($INVEST$) at a system level is a CES production function of every sectoral innovative project (INV_i). We assume that the optimal level of investments within the economy is the one that minimize the sum of the costs faced by each sector:

$$\min_{INV_i} P_{INV} INVEST = \sum_i INV_i Ptax_i$$

s.t.

$$INVEST = \left\{ \sum_i \alpha_{INV_i} INV_i^{-\rho_{INV}} \right\}^{-\frac{1}{\rho_{INV}}}$$

Thus the optimal solution is given by:

[9] Which states that whether the firms raise capital issuing stock or debt does not influence the value of the firm.

$$INV_i^* = (\alpha_{INV_i})^{\sigma_{INV}} \left(\frac{P_{INV}}{Ptax_i} \right)^{\sigma_{INV}} INVEST$$

where P_{INV} is the implicit price of investment at an aggregated level.

Firms finance their investments by issuing stock or by bank loans. Again, the optimal assets and liabilities identity minimizes the cost of funding, which includes the cost of equity (E_i) and the cost of loans (D_i):

$$\min_{E_i, D_i} RK_i K_i = r_{E_i} E_i + r_D D_i$$

$s.t.$

$$K_i = \left\{ (\beta_{Ei}) E_i^{-\rho_K} + (\beta_{Di}) D_i^{-\rho_K} \right\}^{-\frac{1}{\rho_K}}$$

The demands for equity and debt are:

$$\begin{aligned} E_i^{d*} &= (\beta_{Ei})^{\sigma_K} \left(\frac{RK_i}{r_{E_i}} \right)^{\sigma_K} K_i \\ D_i^{d*} &= (\beta_{Di})^{\sigma_K} \left(\frac{RK_i}{r_D} \right)^{\sigma_K} K_i \end{aligned}$$

where r_{E_i} and r_D are the cost of equity and debt. The dynamics of the cost of capital is derived from the return on capital invested (rr_i), less its depreciation and plus the capital gain from investments:

$$RK_i(t+1) = rr_i(t+1) - (1-\delta) P_{INV_{t+1}} - P_{INV_t}$$

3.3 Government

The government income is given by social insurance contributions, indirect taxation applied on production and consumption, direct taxation on labor income, portfolio returns and pensions. The total amount of public expenditure can be thought as a CES functions of demands for single sectoral products. Pensions,

interests on public debt and public expenditure represent the government outflows. Assuming that authorities are rational, the government minimizes its costs:

$$\min_{Ggov_i} P_G G = \sum_i Ptax_i Ggov_i$$

s.t.

$$G = \left\{ \sum_i \alpha_{G_i} Ggov_i^{-\rho_{G_i}} \right\}^{-\frac{1}{\rho_{G_i}}}$$

The optimal demand of public expenditure for type of product is:

$$Ggov_i^* = (\alpha_{G_i})^{\sigma_G} \left(\frac{P_G}{Ptax_i} \right)^{\sigma_G} G$$

The difference between inflows and outflows results in the government saving:
$S_G = \sum_i \tau_{p_i} P_{d_i} Xs_i + \sum_i \tau_{c_i} P_i X_i + (\tau + \tau_{cs}) wL_i + \tau \left(\sum_i r_{E_i} E_i \right) + \tau r_D (D + caprow) + \tau r_T T + \tau PENS$
$- (P_G G + r_T T + PENS)$
that, if negative, represents the government deficit.

3.4 Rest of the world

The total quantity of any type of product X_i, offered by the market, derives from the total amount of domestic (Xd_i) and imported (M_i) production. To this composed good we assign the price P_i, while domestic and world prices are P_{d_i} and P_{w_i}.

In the model we assume the Armington hypothesis, for which the domestic goods and imported goods are not perfect substitutes due to their different origin. Therefore the dual problem becomes:

$$\min_{Xd_i, M_i} P_i X_i = P_{d_i} Xd_i + P_{w_i} M_i$$

s.t.

$$X_i = \left\{ \alpha_{M_i} M_i^{-\rho_{M_i}} + \alpha_{Xd_i} Xd_i^{-\rho_{M_i}} \right\}^{-\frac{1}{\rho_{M_i}}}$$

which gives the choices:

$$M_i^* = (\alpha_{M_i})^{\sigma_{M_i}} \left(\frac{P_i}{P_{w_i}}\right)^{\sigma_{M_i}} X_i$$
$$Xxd_i^* = (\alpha_{Xxd_i})^{\sigma_{M_i}} \left(\frac{P_i}{P_{d_i}}\right)^{\sigma_{M_i}} X_i$$

The balance of payment is given by the difference between import and export and the deficit is recovered with interest on capital inflows ($capROW$):

$$P_e Etot + r_D capROW = \sum_i Pw_i M_i$$

The rest of the world decides the quantity to export depending on:

$$\min_{EX_i} P_{EX} EXtot = \sum_i Pd_i EX_i$$

s.t.
$EXtot = \left\{\sum_i \alpha_{EX_i} EX_i^{-\rho_{EX_i}}\right\}^{-\frac{1}{\rho_{EX_i}}}$

$EXtot$ is the total amount of products exported and P_{EX} is the aggregated price for exports. The sectoral Marshallian supply of production towards the rest of the world is:

$$EX_i^* = (\alpha_{EX_i})^{\sigma_{EX}} \left(\frac{P_{EX}}{Pd_i}\right)^{\sigma_{EX}} EXtot$$

4 Clearing conditions

The clearing conditions provide the identities between the supply and the demand for each market: commodities, inputs, financial resources, import and export. Including these equations in the model computation we can determine the equilibrium prices. Applying the Walras law we fix as numerary the price for imported goods (P_{w_i}). The convention for this methodology is to consider all the values of the initial dataset (Social

Accounting Matrix) as quantities, considering all prices equal to 1. Therefore, the equilibrium prices will be expressed as relative prices, with respect to the world price.

The clearing conditions can be listed as:

- Labor market
  $\sum_i L_i^d = L^s$

- Commodities market
  $X_i = \sum_j INT_{ji} + \sum_h Xd_{h_i} + Ggov_i + INV_i$

- Equity market
  $E_i^d = E_i^s$

- Debt market
  $\sum_i D_i^d = D^s$

- Treasuries market
  $T^d = T^s$

- Investments and savings identity
  $P_{INV} INVEST = \sum_h s_h Y_h$

5 Heterogeneity

5.1 Households heterogeneity

To obtain a more detailed analysis at a micro level, this study adopts a social accounting matrix where households are disaggregated into three classes on the base of the equivalent income percentiles. With

reference to the SHIW survey for 2000 we have constructed the household classes percentages and feeded them into the social accounting matrix.

To obtain the equivalence scale we follow the OECD format giving a weight of 1 for one adult, 0.5 for members aged 14 or older, and 0.3 to members younger than 14. The aggregate net disposable income at a household level is then divided by the resulting scalar (as reported in Table 7, Appendix A). The household size appears to be lower for poorest, but this is linked to the evidence that in this class households with elderly people (which can have of 1 or 2 members) are more frequent. Figure 2 on age distribution, confirms that elderly people are more concentrated in the lower income class. After having dropped the observations with negative equivalent income per household level, the net disposable income (lny) and the equivalent income distributions ($lneayhl$) are compared as in Figure 1, Appendix A. Saving rate by equivalent income classes is calculated as total savings over equivalent household income and results to be higher for top income classes, as from Table 4 (Appendix B).

Empirical literature (Guiso and Jappelli [2000]) raises the evidence that households portfolios at the top of the wealth distribution include a higher fraction of risky financial assets. In this paper we confirm this relation but considering the equivalent income, rather than wealth, to differentiate households classes. Therefore, as a contribution to previous studies we observe portfolio household behavior controlling also for households'classes.

The correlation index between the equivalent income and the total amount of financial assets results to be positive (0.48). Considering the population broken down by equivalent income classes, it is possible to quantify the shares of assets owned by poor, middle and rich class and therefore quantify their portfolio preferences. The clue evidence, as from Figure 3 (Appendix D) based on data for year 2000, is that in general Italian households direct most of their savings towards deposits, followed by treasuries and equities. This means that most of Italian households savings are directed into non risky investments. Ranking the shares of portfolio investments by classes, rich class owns the highest share for all three types of investments. Moreover, for the top equivalent income distribution class, most of savings are invested in risky financial assets: equities shares reach 77.15% for rich, 17.48% for middle and 5.37% for poor. These percentages indicate the attitude towards risk of the three different aggregated households.

The households heterogeneity is synthesized in Table 4 (Appendix B) where we report the saving ratio, the share of disposable income and consumption differentiated by classes and the household wealth. Sectoral households consumption shares are computed on the base of Italian National Statistics Survey, and these

different shares of consumption are then assigned to the households classes in our model, for each sector as from Table 5, Appendix B. Rich people spend more on products produced by pharmaceutical and plastic sectors. On the other side, poor people concentrate their expenditure more on services, education and machinery products.

5.2 Firms heterogeneity

In this work we consider two main classes of firms: those who have more and less than 250 employees. This is one of the criteria adopted by the European Commission to define small and medium enterprizes (C.E. [2006]). Elaborating the shares on the base of Italian National Statistic Census 2001 (as from Table 6, Appendix B), the results obtained confirm a trend similar to the concentration index calculated by OECD (as from Table 5, Appendix A). The firms distribution, by class and by number of employees, shows that in most of the sectors, a part from manufacturing, mining and electricity, more than a 50% of firms do not have more than 10 employees (see Figure 1 - Appendix D).This indicates that in most of the cases, small firms are mainly managed by owners, which suggest a household structure of firms'governance.

6 The data and calibration of parameters

The data used for this study have been elaborated to form the Social Accounting Matrix (SAM), which draws the economic inter-flows between agents on the basis of the national accounts.

In a static framework the SAM is the initial benchmark dataset where all first order and clearing conditions are fulfilled. This baseline dataset can then be compared with the simulation results. The SAM built for this study integrates the Input Output Table 2000 with the Bank of Italy Survey 2000, and all these sources of information refer to the same year.

6.1 Input Output table

The main component of a SAM is the Input Output Table (at current prices), which represents the transactions of goods and services across sectors.

The table adopted in the present study has been released by the Italian National Institute of Statistics for 2000. For the purpose of this paper, sectors have been reduced to thirty-three, by aggregation. A first

part of the table describes the inter-sectoral exchanges: the rows report the output for each sector and the columns indicate the output absorbed by other sectors as intermediate inputs. Therefore the value a_{ij} is the amount of output of sector i(row) employed in the production of sector j(column).

A second part allows to verify how much output is used as private consumption (household and no profit organization), as public expenditure (government), as investments (firms), and exports (rest of the world).

In a third block the value added is distributed through return to capital, salaries, taxes, transfers and contributions.

6.2 Social Accounting Matrix

The SAM synthesizes the circular process that starts from the demand for goods and translates into the generation of income. This matrix has to be balanced, which means that rows and columns must coincide in their totals, to ensure that supply and demand clear for each market.

The social accounting matrix used for the calibration of our model is given in Table 3, Appendix B, where the sectoral amounts have been summed up as total. Data are referred to 2000 and the amounts are expressed in billions of euros. The social accounting matrix, elaborated for this work, shows:

- the interflows between 33 sectors (Input Output Table)
- how the value added is distributed between the two production factors (labor and capital)
- the intra-agents (3 households, government, rest of the world) distribution of resources, depending on their savings-consumption choices.

On the basis of the benchmark SAM dataset we calibrate the functional parameters. For some sector, we have null values for parameter α_{inv} (Cobb Douglas coefficient for investments), which shows the low propensity of some industry to invest. In our model we keep this propensity as fixed, while analyzing how the sectoral production will change by giving an exogenous shock to equity. The evidence, that many sectors have such a low propensity to invest, shed lights on the urgent need for more political incentives for innovation. In Table 5 (Appendix C) we compute the IK index, given by the fraction of investments over capital, to compare the level of investments among different sectors. We can observe that sectors with a high capital-intensive technology are: machinery and equipment, motor vehicles and construction.

Another question that raises from the benchmark dataset is that all sectors are mainly labor intensive rather than capital intensive. This might point that the root of the low growth rate in the national economy is that Italian firms are mainly undercapitalized.

6.3 Calibration

The process adopted in this work to calculate the unknown parameters, using the first order conditions, is defined as model calibration (Kehoe and Kehoe [1994]). This methodology can be applied thanks to the quasi-convexity property of the CES function, which allows for the first order condition to be sufficient for global optimum.

The parameters we need to calibrate are those that define preferences and technologies, while the value of the elasticity of substitution ($\sigma = \frac{1}{1+\rho}$), required in CES functions, is exogenous. For some selected parameters the values are indicated in Table 1 (Appendix B) and the explicit calibration functions are displayed in Table 2 (Appendix B).

7 Simulation

The issue covered in this paper is to consider how an increase in the market liquidity, represented through a boost in SMEs' stock market listing, can influence the economic growth of Italian national economy. We keep the households' saving rate and the portfolio preferences as constant but differentiated by class, while households' portfolio preferences change depending on assets returns. We support the idea that if there is more SMEs equity demand through stock listing, also households' portfolio preferences might change in favor of stock investments, contributing to an increase in economic growth.

The simulation has been realized by giving an exogenous shock to demand for equity, in particular with an increase in SMEs equity resources (floating capital), specified by sector. The positive equity shocks have been differentiated by sector, as from Pellizzoni [2002], to reflect the sectoral floating potential as fixed in Appendix B, Table 7. A higher level of shock reflects a higher level of SMEs' stock listing potential, which is mainly concentrated in trade, textile, food products, beverages and tobacco sectors.

The shock is feeded into the model generating new sectoral equity demands which include the exogenous shock for small and medium size enterprizes. Therefore the increase of the new sectoral equity demand depends also on the proportion of SMEs over the total number of firms in each sector, compared to the

proportions of LSEs, which have been determined by the criteria previously specified, to design the Italian firms heterogeneity by size.

In order to estimate the long-run effects, the simulation has been repeated for 10 times (with a two-years term each), which corresponds to a temporal horizon of twenty years. Therefore sectoral shocks are introduced in 2000 and the counterfactual effects are evaluated till 2020, although we are interested in reporting directly the future time horizon 2008-2020.

7.1 Effects of stock market listing on growth

Results are reported in detail both for production side (for 9 main sectors) and the consumption side (for all 3 classes). Some of the simulation results are presented as year-to-year variations, to observe the growth path. For other key variables, we are directly concerned with percentage deviations between the base (2000) and the final year (2020).

Differences calculated between the benchmark and the simulated values after 20 years confirm the expected linkages. An increase in equity accessibility by SMEs would boost the returns to portfolio investments, accomplished by an economic growth enhancement. We can thus confirm the validity of the expected economic consequences:

- with a higher level of equity, SMEs are more likely to be involved in innovative projects;
- SMEs are then more encouraged to develop informal innovation also as investment in human capital;
- the overall economy gains from SMEs competition and interaction on technologies' improvements;
- in a less risky environment households' savings are more attracted by equity portfolio investments.

At a national level, the main results is reported in the Appendix D (Figure 2), in terms of percentage variation compared to the 2000 which is the base year. Following the results, if in 2000 a given fraction of Italian SMEs had been listed on the stock market, the Italian economy would have registered a boost in the GDP growth. In particular, the GDP rate of growth would have reached a level of 4% in 2008 and a peak of 8% in 2020.

The increase in the invested capital during the twenty iterations is due to a higher availability of resources for SMEs' projects. However this can imply a lower marginal productivity of the capital factor since it would

be supplied in higher quantity. The results show anyway the advantages for the whole national economy and the needing for an institutional intervention in ruling and monitoring this change for the structure of financial markets for SMEs.

7.2 Effects on households' choices and re-distribution effects

The initial differences in households' choices are reflected both in terms of saving and consumption preferences. The initial propensity to save is anchored to SHIW values: saving rate is 5.5% for poor class, 18.6% for middle and 37.7% for rich. To analyze the effects of SMEs'listing on households portfolio preferences we can observe a positive trend for shares hold by rich class, while middle and poor percentages shares over type of assets decrease. The trend demonstrates that financial wealth increases for top income classes, while it decreases for low income classes. Therefore we have a negative impact on financial wealth distribution. However if we consider horizontal percentages, as from Table 2 in Appendix C (the composition of households'portfolios), we realize that we have a switch of households preferences from treasuries towards deposits and stocks.

7.3 Effects on the production side and resource re-allocation effects

The impact of the simulation has been estimated in terms of percentage variations compared to the baseline economic situation as reported in the SAM for 2000. Figure 1 reports the production composition in terms of value added and intermediate product for 2000, to gain insight on the production structure. However, to identify those sectors which play a major role in the economy, we need to analyze the weights of value added over national GDP. In 2000, the contributions to value added signal a higher role for wholesale and retail trade (13.44%), real estate (10.91%) and professional activities (7.75%).

As Fig.5 (Appendix D) shows, the change of the aggregate IK index increases due to the new SMEs stock listing. From Table 5 (Appendix C) we can observe that sectors IK growth does not reflect the initial sectoral shock. This might be due to a combined effect of the sectoral weights of SMEs, the IK initial endowments, on the sectoral shock in equity availability and on the intensity of intersectoral flows. Sectors with a higher positive response of the IK to the stock listing shock are metals, agriculture, wood and product of wood, real estate and transport. Therefore, for instance, even though the sector of agriculture does not

have a high initial shock its final IK index anyway reflects the spillover effects deriving from other sectors, which uses agricultural inputs [10]. Clearly, the quantitative level of these effects depends on the sectoral proportion of SMEs.

8 Conclusions

In this paper we analyze the effect of important change in the options of financial sources available for the Italian SMEs. The main contribution of this paper is to micro-found the relationship between households portfolio choices, influenced also by the saving propensity, and the SMEs investment choices.

The general equilibrium simulation reveals that, an increase of the share of equity in the firms' financial sources would allow SMEs to strengthen their growth path. Once the flotation process has started, the whole system registers an economic benefit. In short, we can observe a substantial improvement in the Italian GDP growth rate. However, the stock market listing must be accurately regulated in order to cope with different issues that could consequently emerge, such as:

- speculation, the SMEs must be adequately protected in order to avoid the interest of the investors being attracted only by major companies (aggressive takeovers);
- stakeholders, in listed firms the control of investors over management is less direct, this implies that managers could follow interests different from the ones of the stakeholders;
- financial integration, the development of integrated financial systems support mainly large firms, widening the gap in the growth rates of small and large firms;
- tendency of SMEs to remain localized, since SMEs are characterized by home bias, the integration of financial markets could have the drawback to further isolate small firms;
- lack of specific investment funds, there is still small attention to those investors that could be interested to mid and small caps equity market. There are not sufficient tools that address savings to this kind of investment.

The model applied in this work does not cover all the aspects, such as those related to the structure of corporate governance and to the labor force productivity. On the other hand, it could be interesting to extend the point of how to optimize the investment decisions given a certain level of education and work

[10] For a detailed model on spillover effects see Diao et al. [1999]

ethic of the firm's management. This aspect would require an enquiry on the private and public investment in human capital.

Further studies should also introduce the cost of listing. Floating a firm on the stock market could require huge costs and a long process which does not always fit with the firms' needing of a urgent and certain supply of capital for their innovative project. Moreover, firms are not certain of the real amount of capital they will be able to collect once listed on the stock exchange. The success of the flotation process will depend much upon the qualification of external advisors in carrying out their activity.

Therefore, the final message of this work is that a direct intervention of the institutional authorities is needed in order to address both the quantitative and the qualitative aspects of Italian SMEs' access to financial sources for investments. Institutions might play a crucial role in creating a supportive and certain environment, enabling all households to direct their savings towards local firm investments.

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APPENDIX A

Table 1: European SMEs statistics I

COUNTRIES	**Firms**	**Employees**	**VA by employee**	**Main size**
France	2500	8	76	Micro
Germany	3020	10	90	Large
Italy	4490	4	89	Micro
Spain	2680	6	82	Micro
United Kingdom	2230	11	69	Large

Source: OECD Economic Outlook 2003

Table 2: European SMEs statistics II

Stock Markets	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Italian SE	243	270	297	294	295	279	278	282
SMEs							13	18
Deutsche Borse	662	851	983	983	934	866	819	764
SMEs							-	3
Irish SE	100	101	96	87	76	66	65	66
SMEs							8	11
Ljubljana SE	90	130	149	151	135	134	140	116
SMEs							111	91
London SE	2423	2274	2374	2332	2824	2692	2837	3091
SMEs							905	1179
Swiss SE	424	412	416	412	398	419	409	400
SMEs							34	36

Source:World Federation of Exchanges

Table 3: Italian SMEs statistics I

Description	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Listed Italian Companies	223	264	291	288	288	271
Capitalization (Mil.Euro)	481.965	726.566	818.384	592.319	457.992	487.446
Capitalization/GNP	45.3	65.6	70.2	48.6	36.3	37.5
New entries capitaliz.	21.722	189.822	29.764	10.554	5.142	1.412

Source: http:/www.bancaditalia.it/pubblicazioni/ricec/relann/rel03/rel03it/relaec

Table 4: Italian SMEs statistics II

Variables	**Micro**	**Small**	**Medium**	**SMEs**	**LSEs**	**Total**
N.Firms	3.938	168	16	4.122	3	4.125
N.Emplyees	6.912	3.032	1.578	11.523	2.820	14.343
V.A. (thousands of Euro)	599.063	444.301	288.648	1.332.012	533.974	1.865.986

Source:http : *//ec.europa.eu/enterprise/library/lib − entrepreneurship/*

Table 5: Sectoral Concentration Index Italy

Sector	Index
Mining and quarrying	2.657*
Food products and beverages	1.384*
Tobacco products	8.514*
Textiles	471
Wearing apparel	424
Leather and articles of leather, footwear	746*
Wood, prod. of wood	548*
Paper and paper products	934
Printing and publishing	692
Coke and petroleum products, nuclear fuel	5.888
Chemicals and chemical products	1.874
Rubber and plastic products	632
Other non metallic mineral prod.	640
Basic metals	1,767
Fabricated metal prod.	435
Machinery and equipment	837
Office, accounting , computing machinery	1.425*
Electrical machinery	1.012
Radio, telev., commun. equip.	3.539
Precision instr.	2.149*
Motor vehicles	4.965
Other transport equipment	4.103
Furniture, manufacturing	839*
Recycling	662*
Electricity, gas, water	7.879*
Construction	763
Sale, maint., repair vehic/cycle	624
Wholesale trade exc motor vec/cycle	399
Retail trade exc motor vec/cycle	780
Hotels and restaurants	1.344
Land transport, transport via pipelines	744
Water transport	4.673*
Air transport	6.529*
Aux. transport activities	659
Post and telecomm.	8.979
Real estate activities	603
Computer and related act.	583
R&D	1.084*
Other business activities	519

**Note: Values compiled with missing size class information.*

Table 6: Average number of credit lines by size in 2000

Sectors	11-20	21-50	51-250	251-500	over 500
Traditional	4.0	4.7	6.6	8.3	10.1
Of scale	4.1	4.8	7.2	7.8	7.5
Specialized	3.7	4.8	7.2	9.5	7.9
High tech	3.8	4.8	6.1	8.7	8.2

*Source: : http : //www.capitalia.it/pages/studi*02*b.htm*

Table 7: Households equivalent income by equivalent classes, averages

	Equiv.Income at member level	Households Income at household level	Households size	Equivalence scale
Poor	34652.45	63302.74	2.71	1.78
Middle	76095.00	162283.60	3.48	2.12
Rich	158320.20	373949.40	3.91	2.33

Figure 1: Net disposable and equivalent income distribution, kernel densities

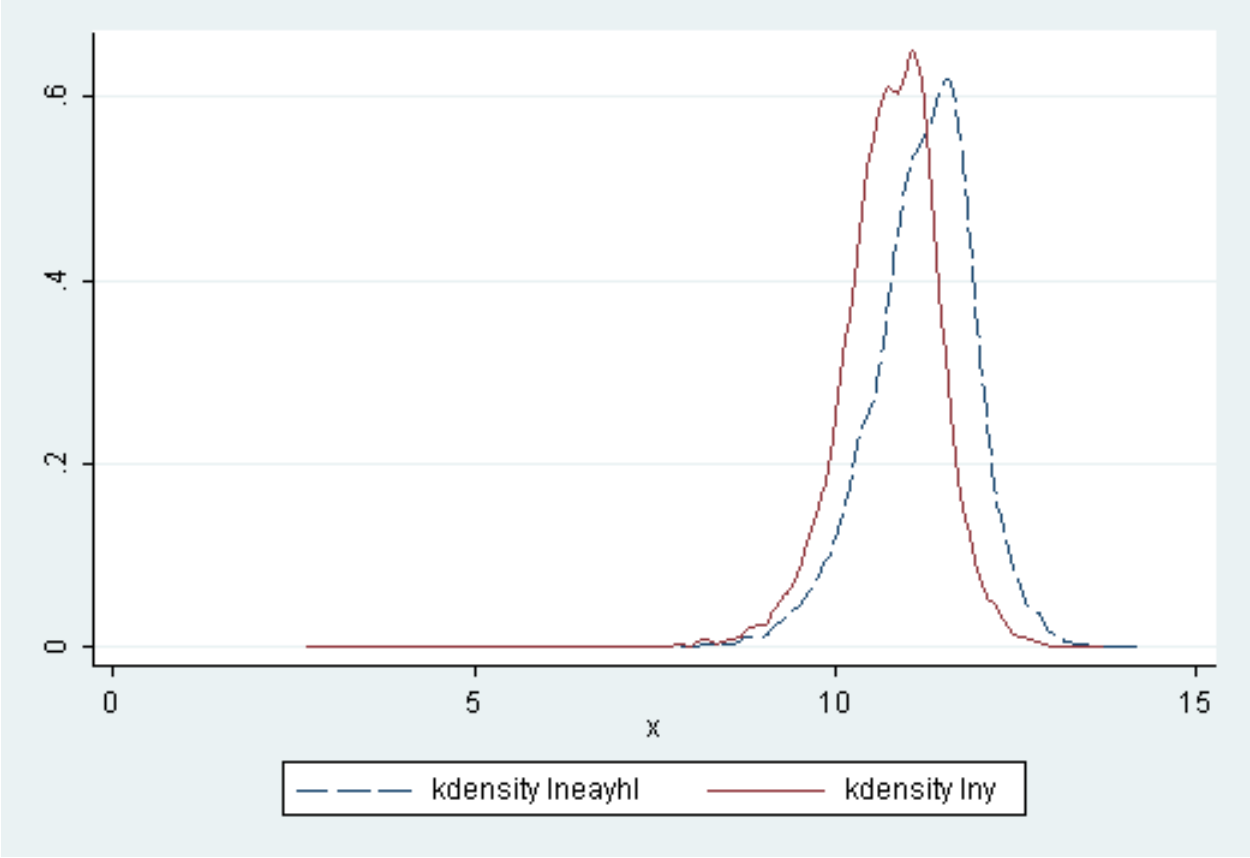
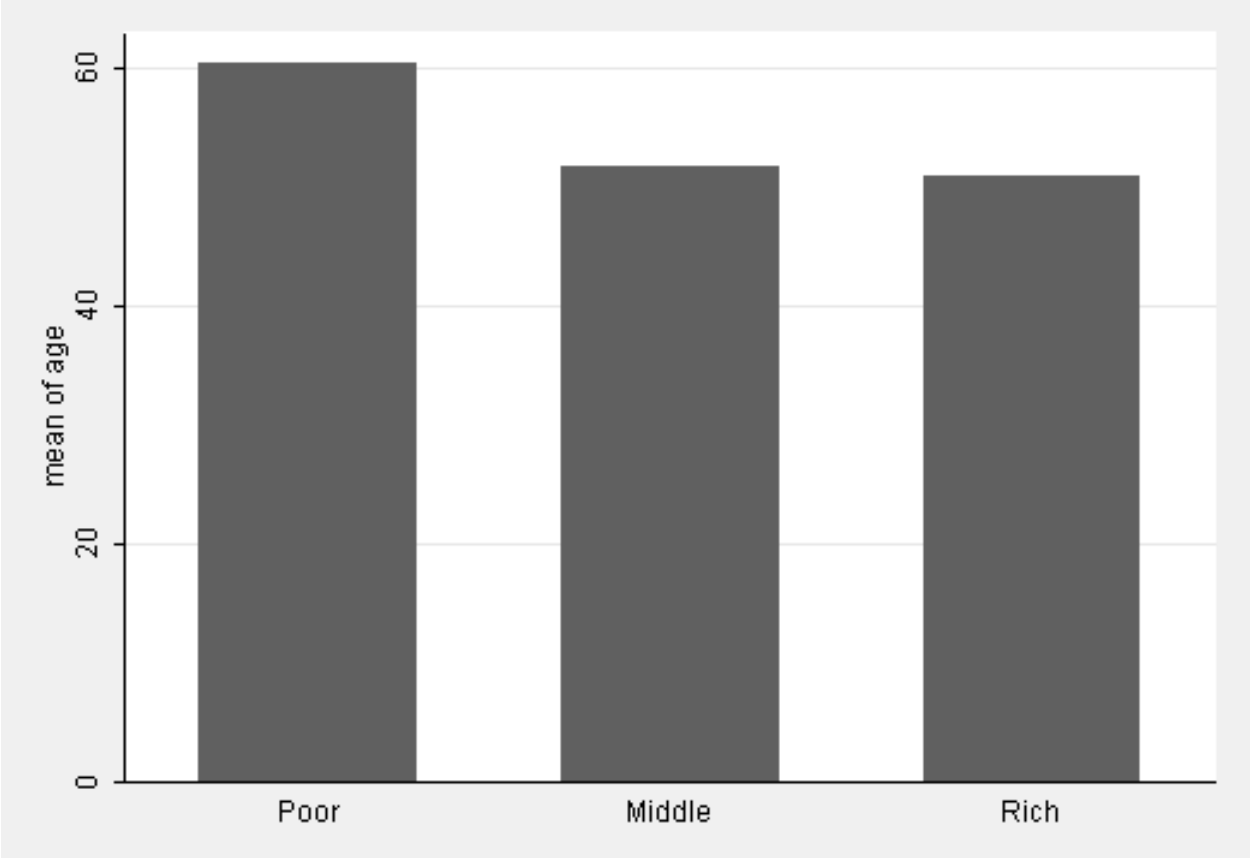


Figure 2: Age distribution over income classes



APPENDIX B: Benchmark dataset

Table 1: Model variables and parameters

Variables	Description	
C_h	Household consumption	
P_C	Consumption price index	
E_i	Equity investment	
D	Deposit investment	
T	Treasury investment	
P	Portfolio value	
Xd_{h_i}	Sectoral household cons.	
Y_h	Household income	
Xs_i	Production	
Pd_i	Output price	
VA_i	Value added	
P_{VA_i}	Price value added	
$INTT_i$	Intermediate product	
P_{INT_i}	Price interm.product	
INT_{ij}	Sector by sector interm. product	
K_i^d	Capital demand	
RK_i	Cost of capital	
L_i^d	Labor demand	
w	Cost of labor	
INV_i	Sectoral investment	
$INVEST$	Aggregate investment	
P_{INV}	Implicit invest.price	
Xxd_i	Products for domestic cons.	
E_i	Products for export	
$EXtot$	Total export	
P_{EX}	Price for export	
M_i	Sectoral Import	
X_i	Composite product	
G	Government expenditure	
$Ggov_i$	Government cons. for good i	
Parameters	Description	Values
δ	Depreciation	0.039
r_T	Bond Yield	0.048
r_D	Deposit Yield	0.029
σ	Elasticity of substitution in CES consumption function	2.000
σ_{va}	Elasticity of substitution in CES value added function	2.500
σ_{int}	Elasticity of substitution in CES intermediate function	2.000
σ_{inv}	Elasticity of substitution in CES investment function	2.000
σ_m, σ_e	Elasticity of substitution in CES import and export function	2.000
σ_w	Elasticity of substitution in CET portfolio function	2.000

Table 2: Benchmark calibration of selected parameters

Description	Parameters
Scale parameter in final product function	$A_i = \frac{Xs_i}{VA_i^{\alpha_{Xs_i}} INTT_i^{(1-\alpha_{Xs_i})}}$
Share parameter in final product function	$\alpha_{Xs_i} = \frac{P_{va_i} VA_i}{P_{Xs_i} Xs_i (1-\tau_{p_i})}$
Share parameter in value added function	$\alpha_{VA_i} = \left(\frac{L_i}{VA_i}\right)^{-\sigma_{VA_i}} \left(\frac{W}{P_{va_i}}\right)$
Share parameter in intermediate function	$\alpha_{INT_i} = \left(\frac{INT_j i}{INTT_i}\right)^{-\sigma_{INT_i}} \left(\frac{Ptax_j}{P_{int_i}}\right)$
Equity share parameter in capital function	$\alpha_{E_i} = \left(\frac{E_i}{RK_i K_i} \left(\frac{rr_i}{r_{E_i}}\right)^{\sigma_{K_i}}\right)^{\frac{1}{\sigma_{K_i}}}$
Deposit share parameter in capital function	$\alpha_{D_i} = \left(\frac{D_i}{RK_i K_i} \left(\frac{rr_i}{r_{D_i}}\right)^{\sigma_{K_i}}\right)^{\frac{1}{\sigma_{K_i}}}$
Treasury share parameter in capital function	$\alpha_T = \left(\frac{T}{RK_i K_i} \left(\frac{rr_i}{r_T}\right)^{\sigma_{K_i}}\right)^{\frac{1}{\sigma_{K_i}}}$
Equity share parameter in portfolio function	$\gamma_{1i} = \left(\frac{E_i}{p} \left(\frac{\bar{rr}}{r_{E_i}}\right)^{-\sigma_p}\right)^{-\frac{1}{\sigma_p}}$
Deposit share parameter in portfolio function	$\gamma_2 = \left(\frac{D_i}{P} \left(\frac{\bar{rr}}{r_{D_i}}\right)^{-\sigma_p}\right)^{-\frac{1}{\sigma_p}}$
Treasury share parameter in portfolio function	$\gamma_3 = \left(\frac{T}{P} \left(\frac{\bar{rr}}{r_T}\right)^{-\sigma_p}\right)^{-\frac{1}{\sigma_p}}$

Table 3: Social accounting matrix 2000

	IO	Cap	Lab	Poor	Middle	Rich	Gov	Inv	Exp	Tot
IO	1101.31	0.00	0.00	187.00	219.22	259.92	213.22	218.03	300.42	2499.11
Cap	569.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60	571.77
Lab	464.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	464.92
Poor	0.00	108.64	88.33	0.00	0.00	0.00	42.44	0.00	0.00	239.41
Mid	0.00	165.81	134.83	0.00	0.00	0.00	64.78	0.00	0.00	365.42
Rich	0.00	297.32	241.76	0.00	0.00	0.00	116.16	0.00	0.00	655.24
Gov	60.69	0.00	0.00	41.52	96.06	238.33	0.00	0.00	0.00	436.60
Sav	0.00	0.00	0.00	10.90	50.15	156.98	0.00	0.00	0.00	218.03
Imp	303.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	303.02
Tot	2499.11	571.77	464.92	239.41	365.42	655.24	436.60	218.03	303.02	0.00

Table 4: Benchmark dataset 2000 - HOH values

	Poor	Middle	Rich
Savings amount	10.902	50.148	156.984
Savings rate	0.055	0.186	0.377
Income	197.897	269.365	416.903
Consumption	186.996	219.217	259.918
Households' wealth	1170.972	1816.187	3622.878

Table 5: Consumption household shares

	Poor	Middle	Rich
Agriculture	0.265	0.348	0.387
Food prod.,bev.,tob.	0.252	0.355	0.393
Textiles	0.311	0.336	0.353
Wood, prod. of wood	0.296	0.335	0.368
Paper prod., print., publ.	0.308	0.339	0.353
Fuel products	0.285	0.349	0.366
Chemical	0.256	0.335	0.409
Pharmaceutical	0.219	0.298	0.483
Plastic	0.202	0.315	0.483
Non metallic mineral prod.	0.226	0.341	0.433
Metals	0.226	0.341	0.433
Fabricated metal prod.	0.294	0.338	0.367
Machinery and equipment	0.324	0.326	0.350
Electrical machinery	0.305	0.339	0.357
Radio, telev., commun. equip.	0.282	0.355	0.363
Precision instr.	0.280	0.326	0.394
Motor vehicles	0.297	0.337	0.366
Manufacturing	0.313	0.322	0.365
Electricity, gas, water	0.263	0.316	0.421
Construction	0.221	0.357	0.422
Wholesale and retail trade	0.256	0.311	0.433
Hotels and restaurants	0.277	0.351	0.373
Transport	0.304	0.332	0.364
Post and telecomm.	0.265	0.321	0.413
Finance and insurance	0.265	0.359	0.376
Real Estate	0.310	0.311	0.380
Computer and related act.	0.221	0.337	0.443
R&D	0.333	0.333	0.333
Profession	0.296	0.342	0.363
Public admin. and defence	0.333	0.333	0.333
Education	0.229	0.332	0.439
Health and social work	0.292	0.349	0.359
Other services	0.310	0.334	0.356

Table 6: Sectors broken down by employment size classes, proportions by number of employees

	<250 employees	>250 employees
Agriculture	0.968	0.032
Food prod.,bev.,tob.	0.771	0.229
Textiles	0.771	0.229
Wood, prod. of wood	0.771	0.229
Paper prod., print., publ.	0.771	0.229
Fuel products	0.771	0.229
Chemical	0.771	0.229
Pharmaceutical	0.771	0.229
Plastic	0.771	0.229
Non metallic mineral prod.	0.771	0.229
Metals	0.771	0.229
Fabricated metal prod.	0.771	0.229
Machinery and equipment	0.771	0.229
Electrical machinery	0.771	0.229
Radio, telev., commun. equip.	0.771	0.229
Precision instr.	0.771	0.229
Motor vehicles	0.771	0.229
Manufacturing	0.771	0.229
Electricity, gas, water	0.187	0.813
Construction	0.971	0.029
Wholesale and retail trade	0.910	0.090
Hotels and restaurants	0.884	0.116
Transport	0.493	0.507
Post and telecomm.	0.493	0.507
Finance and insurance	0.379	0.621
Real Estate	0.834	0.166
Computer and related act.	0.834	0.166
R&D	0.834	0.166
Profession	0.834	0.166
Public admin. and defence	0.834	0.166
Education	0.834	0.166
Health and social work	0.834	0.166
Other services	0.834	0.166

Source: National Institute of Statistics Census 2001

Table 7: Sectoral positive exogenous shocks on equity funds for small and medium enterprizes

Sectors	Variation
Agriculture	0.001
Food products, beverages and tobacco	0.096
Textiles	0.099
Wood and products of wood	0.007
Paper products, printing and publ.	0.035
Fuel products	0.005
Chemical	0.021
Pharmaceutical	0.020
Plastic	0.023
Non metallic mineral products	0.031
Metals	0.052
Fabricated metal products	0.052
Machinery and equipment	0.078
Electrical machinery	0.016
Radio, television and commun. equip.	0.016
Medical, precision and optical instr.	0.016
Motor vehicles	0.028
Manufacturing	0.039
Electricity, gas, and water supply	0.024
Construction	0.038
Wholesale and retail trade	0.201
Hotels and restaurants	0.007
Transport	0.060
Post and telecommunications	0.003
Finance and insurance	0.003
Real Estate	0.005
Computer and related activities	0.005
R&D	0.005
Profession	0.005
Public admin. and defence	0.003
Education	0.003
Health and social work	0.002
Other services	0.003

Source: Pellizzoni[2002]

Table 8: Sectoral shares of intermediate, value added and production, percentage values

	Interm. over production	VA over production	VA over TotVA	Output over TotOutput
Agriculture	31.016	68.055	3.204	2.217
Food prod.,bev.,tob.	72.802	25.928	2.238	4.064
Textiles	65.217	31.998	2.977	4.381
Wood, prod. of wood	63.508	34.679	0.592	0.803
Paper prod., print., publ.	65.250	32.429	1.387	2.013
Fuel products	86.733	7.055	0.211	1.410
Chemical	65.663	30.352	1.292	2.004
Pharmaceutical	65.664	30.350	0.525	0.815
Plastic	65.902	32.088	0.892	1.309
Non metallic mineral prod.	59.522	37.413	1.392	1.752
Metals	77.258	18.786	0.678	1.700
Fabricated metal prod.	61.431	36.782	2.142	2.742
Machinery and equipment	67.709	30.523	2.623	4.046
Electrical machinery	66.025	32.507	0.771	1.116
Radio, telev., commun. equip.	65.881	31.854	0.711	1.052
Precision instr.	53.429	44.582	0.473	0.499
Motor vehicles	72.714	24.729	1.317	2.507
Manufacturing	70.599	27.243	0.939	1.623
Electricity, gas, water	50.002	43.114	2.270	2.479
Construction	53.895	43.874	5.024	5.392
Wholesale and retail trade	38.724	58.053	13.441	10.902
Hotels and restaurants	45.191	52.228	3.684	3.322
Transport	49.058	45.979	5.876	6.018
Post and telecomm.	29.645	69.098	2.386	1.626
Finance and insurance	42.594	53.900	6.361	5.557
Real Estate	12.906	86.029	10.905	5.969
Computer and related act.	35.681	62.319	1.567	1.184
R&D	33.983	64.629	0.378	0.276
Profession	40.089	56.686	7.748	6.436
Public admin. and defence	28.279	69.480	5.602	3.796
Education	12.123	86.964	5.252	2.844
Health and social work	47.804	49.800	4.952	4.682
Other services	93.727	2.598	0.191	3.463
Total			100	100

APPENDIX C: Simulation results, scenario with positive shock in small firms' equity

Table 1: Benchmark dataset 2000 - Households' Portfolio Choices, percentage values

	Equities	Deposits	Bonds	Total
Poor	35.399	48.375	16.226	100.000
Middle	34.342	49.691	15.968	100.000
Rich	27.732	57.915	14.353	100.000

Table 2: Changes in households'portfolio composition, percentage values

	Poor			Middle			Rich		
	Bas	Sim	Var	Bas	Sim	Var	Bas	Sim	Var
Stocks	35.399	37.353	5.518	34.342	36.212	5.447	27.732	29.115	4.986
Deposits	48.375	50.421	4.230	49.691	51.763	4.170	57.915	60.115	3.799
Bonds	16.226	12.226	-24.652	15.968	12.025	-24.694	14.353	10.770	-24.962
Total	100.000	100.000		100.000	100.000		100.000	100.000	

Table 3: Households' budget

	Income			Consumption			Savings		
	Bas	Sim	Var(%)	Bas	Sim	Var(%)	Bas	Sim	Var(%)
Poor	197.897	211.076	6.659	186.996	199.448	6.659	10.902	11.628	6.659
Middle	269.365	286.906	6.512	219.217	233.492	6.512	50.148	53.413	6.512
Rich	416.903	443.863	6.467	259.918	276.725	6.466	156.984	167.136	6.467
Total	884.165	941.845	19.638	666.131	709.665	19.637	218.034	232.177	19.638

Table 4: Changes in firms'financial choices, percentage values

	EQUITY			DEBT			E/D ratio		
	Bas	Sim	Var	Bas	Sim	Var	Bas	Sim	Var
Food	73.529	73.784	0.347	26.471	26.216	-0.963	2.778	2.814	1.322
Textiles	70.588	70.326	-0.371	29.412	29.674	0.890	2.400	2.370	-1.250
Wood	67.416	66.180	-1.833	32.584	33.820	3.792	2.069	1.957	-5.420
Fuel products	66.667	62.963	-5.556	33.333	37.037	11.112	2.000	1.700	-15.001
Chemical	70.588	69.980	-0.862	29.412	30.020	2.069	2.400	2.331	-2.871
Manufacturing	66.667	65.009	-2.486	33.333	34.991	4.972	2.000	1.858	-7.104
Wholesale	66.667	71.339	7.009	33.333	28.661	-14.018	2.000	2.489	24.455
Real Estate	66.667	66.114	-0.829	33.333	33.886	1.658	2.000	1.951	-2.447
Profession	66.667	65.134	-2.299	33.333	34.866	4.598	2.000	1.868	-6.594

Table 5: Production side, percentage changes

	Production	Sales	Investments
Food prod.,bev.,tob.	4.513	2.388	11.288
Textiles	5.885	4.188	12.394
Wood, prod. of wood	3.864	3.293	5.881
Fuel products	7.524	4.244	12.088
Chemical	5.716	4.566	6.225
Manufacturing	6.241	4.983	9.380
Wholesale and retail trade	4.704	2.968	16.199
Real Estate	-0.672	-0.685	5.190
Profession	1.801	1.743	6.528

Table 6: Sectoral IK index

	IK bas	IK sim	IK var
Agriculture	0.001	1.082	1.081
Textiles	0.002	1.041	1.039
Wood, prod. of wood	0.008	1.080	1.072
Paper prod., print., publ.	0.001	1.039	1.038
Plastic	0.003	1.052	1.049
Non metallic mineral prod.	0.007	1.029	1.022
Metals	0.001	1.093	1.092
Fabricated metal prod.	0.079	1.048	0.969
Machinery and equipment	0.306	1.075	0.769
Electrical machinery	0.146	1.099	0.953
Radio, telev., commun. equip.	0.239	1.082	0.843
Precision instr.	0.258	1.086	0.828
Motor vehicles	0.337	1.097	0.760
Manufacturing	0.099	1.058	0.959
Construction	0.274	1.011	0.737
Wholesale and retail trade	0.019	0.991	0.972
Transport	0.015	1.060	1.045
Real Estate	0.006	1.059	1.053
Computer and related act.	0.085	1.046	0.961
Profession	0.009	1.050	1.041
Other services	0.083	1.063	0.980

APPENDIX D

Figure 1: Small and medium size enterprizes by number of employees

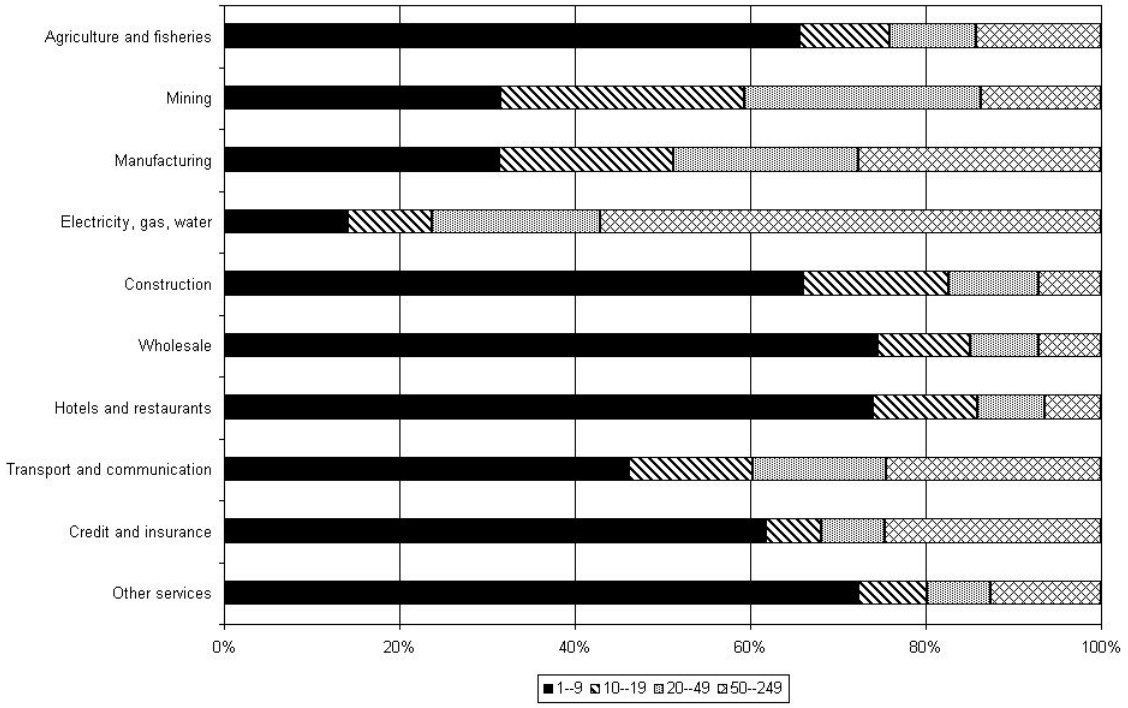


Figure 2: GDP rate of growth 2008-2020, percentage variations

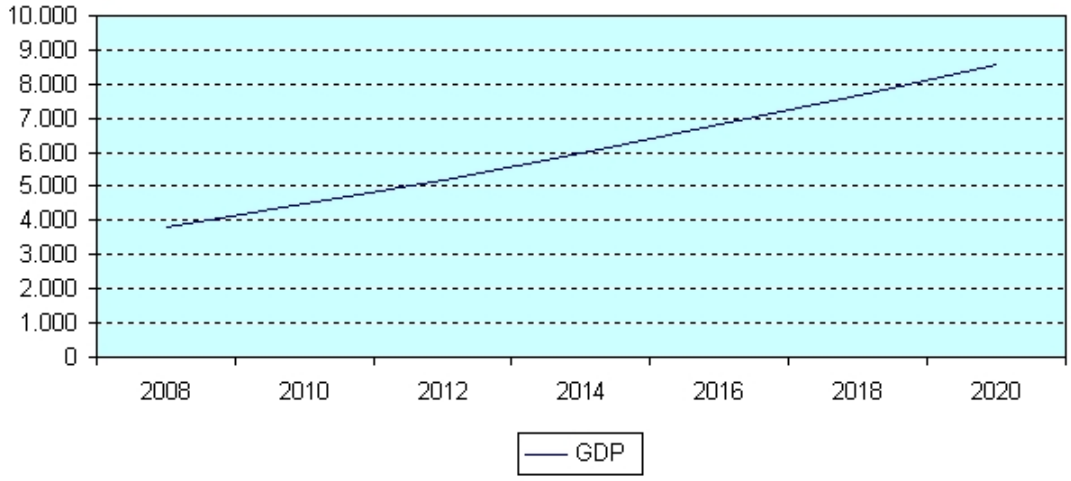


Figure 3: Households portfolio preferences by classes

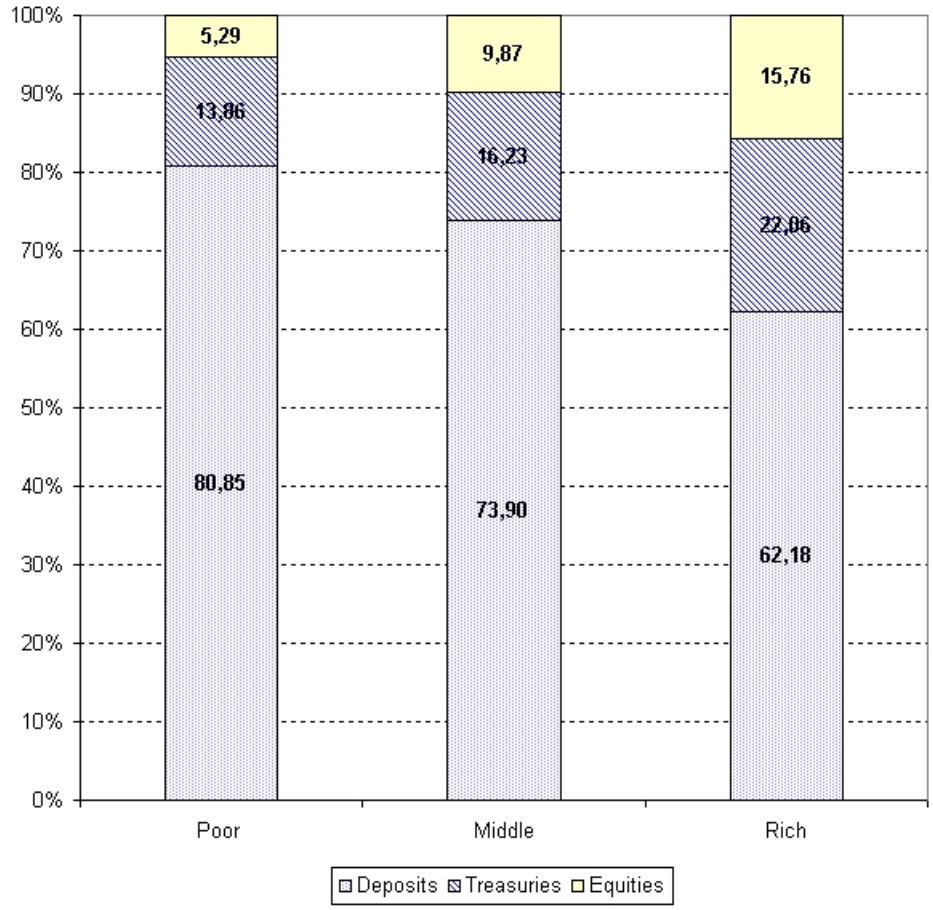


Figure 4: Deposits and equities percentages adopted for simulation

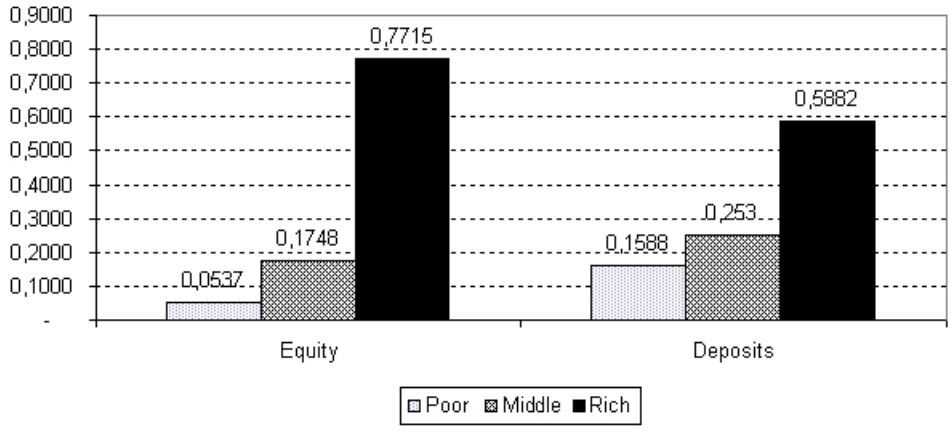


Figure 5: Aggregate IK index 2008-2020

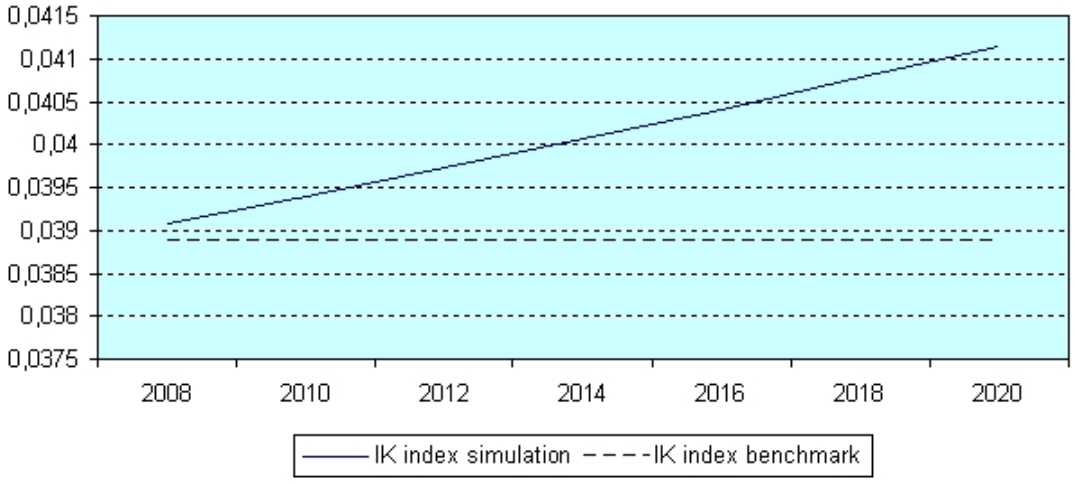


Figure 6: Trends in assets distribution, percentage shares over type of assets