Is Financial Development Important for Economic Growth in Slovenia?

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Abstract:

In this paper we try to estimate effects of financial deepness and capital account liberalization on economic growth, investment in Slovenia from 1993 to the second quarter of 2001. We find out that the only positive effect of capital account liberalization was increased credits to private sector. On the other hand, financial depth has a positive and significant effect on economic growth and investment. Moreover, it is not likely that also capital account liberalization positively affects above specified choice variables. Namely, financial deepening is achieved through development of adequate institutions and sustainable macroeconomic policies. Once financial system is set in the country, capital account liberalization takes place.

Keywords: financial deepness, capital account liberalization, economic growth

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1. Introduction

The empirical evidence suggests indeed that countries that grow faster devote a larger share of output to investment (to physical as well as to human capital), have lower inflation, more stable macroeconomic environment, and are more open than countries with moderate grow rates. Thus, the question that arises is how to promote investment in the country.

The purpose of this research has highlighted the existence of a variety of endogenous mechanisms that can promote a sustainable growth rate in the economy. One of our main concerns is to find out if a financial development implementation in Slovenia promotes investment in human and physical capital in order to attain a sustainable economic growth.

In our paper we show that financial liberalization (capital account liberalization) cannot be driven without efficient allocation of resources. We illustrate that Slovenian capital liberalization will not have a positive effect on economic growth if capital flows are not allocated efficiently. We use two indicators to observe capital account liberalization: (1) restriction measure shows abolishment of capital controls in Slovenian financial system, and (2) openness measure, which looks directly at one of the consequences of liberalization, that is, larger ownership of foreign assets in the country and liabilities elsewhere. We present both measures in Section 2.

A positive effect of open capital markets is that foreign borrowing and lending may contribute to the development of a country’s financial system. Subsidiaries and branches of foreign banks that enter the country may increase the size of national banking system and introduce financial innovation. In Section 3 and 4 we show that open capital accounts have positive and significant effect on financial deepness. As King and Levine (1993), we measure financial deepening by three indicators: (1) PRIVY illustrates the amount of credit which is used to enhance private sector activities, (2) LLY shows the average size of the financial intermediary sector, and (3) BANKS represents the role of
commercial banks in the overall financial sector. Each of these indicators is constructed in such way that the increase reflects greater financial deepness.

In section 5 we find a positive but weak effect of financial liberalization on economic growth. One reason for that could be that capital flows that come to Slovenia are not allocated efficiently enough to induce economic growth. Therefore, we are interested to see adding variables that proxy for macroeconomic reforms changes the importance of financial liberalization on economic growth. We observe two variables that are often included as regressors in cross-country analyses. The first variable is inflation. We expect that high rates of inflation will reduce economic growth through a variety of mechanisms which can influence both the rate of capital accumulation and the rate of growth of total factor productivity. The second variable is a measure of trade openness, a ratio of exports plus imports to GDP. We expect a positive and significant effect of this variable on economic growth.

Even though we show that financial liberalization has some effect on economic growth, it is more interesting to see how liberalization increased growth. Since we expect that investment will be most affected after liberalizing capital account, we observe the effect of liberalization on investment as a share of GDP. Concluding remarks are presented in Section 6.

2. Capital Account Liberalization

It is difficult to measure capital account liberalization with a single indicator. There is no satisfactory measure. We use two indicators to measure capital account liberalization: 1. restriction measure, and 2. openness measure.

2.1 Restriction Measure

Restriction measure is based on the restrictions on capital flows as reported to the IMF by the national authorities. This indicator directly measures capital controls. It is constructed as an on/off indicator of the existence of rules/restrictions that inhibit gross border capital flows or discriminate on the basis of citizenship or residence of transacting
agents. However, this measure does not capture differences in the degree of liberalization: for example, the country might liberalize some, but not all categories of capital account, and, in accordance with the restriction measure, it could still be labeled as closed. For that purpose, it is very difficult to quantify the measure and take into consideration gradual liberalization steps in categories of the capital account. In order to correctly present the capital account liberalization process in Slovenia, we decided to describe what has been done in the legislation area regarding foreign exchange transactions.

The *restriction measure* indicator for Slovenia can be defined on the basis of foreign exchange regime. The new Foreign Exchange Law was issued in the Official Gazette of the RS No. 23/99 on April 8, 1999. The regulation of the new Foreign Exchange Law has come into force on September 1, 1999. Before this date, capital transactions in Slovenia were regulated by: (1) Foreign Exchange Law (Official Gazette of the RS No. 1/91-1, 71/93 and 63/95), (2) Foreign Investment Law (Official Gazette of the SFRY, No. 77/88, and Official Gazette of the RS, No. 30/93, 32/93), (3) Company Law (Official Gazette of the RS, No. 30/93, 29/94 and 82/94), (4) Law on Foreign Credit Transactions (Official Gazette of the RS, No. 1/91-1 and No. 63/95).  

Thus, with introduction of the new foreign exchange regime, Slovenia started gradually to liberalize capital account transactions. Major changes were done on the following categories of capital account:

**2.1.1 Foreign Direct Investment**

Before September 1, 1999 foreign individuals and foreign legal persons were not allowed to have hundred percent owned investment in the field of military equipment, insurance, mass media, rail and air transport, communications and telecommunications and publishing. Foreign participation was limited in the following sectors: auditing companies (up to 49 percent), brokerage houses (up to 24 percent), investment companies for investment funds (up to 20 percent), authorized

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1 All information is taken from the Central Bank web page (http://www.bsi.si/html/zakoni_predpisi)
investment companies (up to 10 percent), media (up to 33 percent), banks (approval of the Bank of Slovenia for acquisition of qualified share of voting rights), and insurance (participation with prior approval only). The foreign acquisition of more than 25 percent of shares of newly privatized companies was subject to approval of the Government.

The first step in liberalization was introduced on September 1, 1999. The prohibition of hundred percent foreign ownership applied to the areas of (1) production and trading in armaments and (2) the provision of obligatory pension and health insurance financed from the budget. The limited ownership was allowed in auditing companies (up to 49 percent), and media (up to 33 percent). The participation of non-residents was subject to approval of the competent authority in the field of investment companies for investment funds (over 20 percent), and authorized investment companies (over 10 percent).

The second step in liberalization was introduced on July 1, 2001. The limitation still applies to the following areas or fields: (1) exploitation of natural resources, subject to a concession, (2) investigation services, and (3) organization of gambling, betting, lotteries and other similar activities.

2.1.2 Portfolio Investment

There were some liberalization processes in the area of portfolio investment. Before September 1, 1999, non-residents could purchase or sell securities in Slovenia through an authorized participant on the securities markets. In addition, on February 1997, the Bank of Slovenia introduced custody accounts for non-residents who purchased Slovene securities with the investment horizon shorter than seven years and holdings less than 50 percent of the issue. Accounts had to opened with the authorized banks (banks must be authorized participants on the securities markets in order to conduct portfolio investment operations in Slovenia). On February 1, 1999, portfolio investment regulation was partially liberalized. Custody accounts were not necessary if portfolio investment were implemented in the following areas: (1)
purchase of debt instruments in the private issue, (2) purchase of shares issued by domestic companies on the primary markets, (3) foreign investor’s acquisition of more than a 10 percent share of company’s capital or more than 10 percent of voting rights, and (4) portfolio investment in shares acquired by non-residents who undertake that in the subsequent 4 years they will not sell, a sign or otherwise dispose of this securities to third parties. After September 1, 1999 the last case is not specified anymore in legislation.

Before September 1, 1999, authorized banks were obliged to pay a premium for the “right to buy” charged by the Bank of Slovenia in the amount of 0.7 percent of the balances on custody accounts. This premium was reduced to 0.2 percent of the balances on custody accounts after June 30, 2001. Moreover, from July 1, 2001, portfolio investment in long-term securities in Slovenia are completely liberalized. The central bank abolished all restrictions and additional central bank’s costs associated with custodian accounts for non-residents.

Residents may purchase and sell foreign securities abroad through a domestic authorized participant on securities markets only. Before July 1, 2001, residents others than banks, investment funds and insurance companies could purchase abroad only securities, issued by a member state of the OECD, international financial institutions and other securities with high rating (minimum AA) without any restrictions. After this date the investment in securities abroad by residents are free of any restrictions.

2.1.3 Credit operations

Before September 9, 1999, credit transactions between residents and nonresidents were regulated by the Law on Foreign Credit Transactions. Registration of such transactions is required with the Bank of Slovenia. Residents could contract commercial credits with nonresidents without restrictions. This transaction had to be registered with the Bank of Slovenia if the payment for goods and services was postponed for more than twelve months. If domestic persons were engaged in foreign
financial loans they were obliged to pay non-interest bearing tolar deposit, held with
the Bank of Slovenia for the fixed period of two years (regardless of the transaction’s
maturity). The requirement of non-interest bearing tolar deposit was abolished on
September 1, 1999. That means that credit transactions between resident and
nonresidents are free of any restrictions.

Moreover, after September 1, 1999, credit operations between residents may be
granted in foreign currency for financing imports of goods and services, for
settlement of other liabilities two nonresidents and repayment of foreign currency
payments raised in Slovenia.

2.1.4 Accounts
Before September 1, 1999, nonresidents were allowed to open nonresidents accounts
in domestic currency with authorized banks and conducted tolar-denominated
operations. Tolar cash withdrawals were limited to 250,000 tolar per month.
Withdrawals exceeding this amount were subject to prior approval of the Bank of
Slovenia. After September 1, 1999, non-residents can have accounts in domestic and
foreign currency with authorized banks in Slovenia and cash withdrawals are not
limited (neither in tolars nor in foreign currency).

Before September 1, 1999, domestic legal persons, other than banks, were not
allowed to maintain accounts abroad. There were some exceptions where Bank of
Slovenia approved opening an account of a legal resident abroad (diplomatic missions
and consular representations, press agencies, companies performing civil construction
work abroad, companies that perform services in international transportation of goods
and passengers, and insurance and reinsurance companies). However, after July 1,
2001, legal persons are allowed to open accounts abroad, as well as other persons
defined in the previous discussion, together with natural persons with a permanent or
a temporary residence in Slovenia and a valid resident visa or work permit abroad.
Other residents can maintain accounts abroad only with prior approval of the Bank of
Slovenia.
2.2 Openness Measure

Thus, Slovenia is gradually liberalizing its capital account transactions, starting with the FDI and portfolio investment flows. In order to see the progress of liberalization, we present the second and complementary indicator of capital account liberalization. This is so called openness measure, based on estimated gross stocks of foreign assets and liabilities as a ratio to the GDP. It is inspired by the use of similar variables to measure domestic financial depth, such as the stock of credit to the private sector as a ratio to GDP. The openness measure is created by calculating the gross level of FDI and portfolio assets and liabilities via the accumulation of the corresponding inflows and outflows. If this measure is high, it means that the country is open and has been experiencing significant private sector flows to and from the rest of the world.

The openness measure can be defined as follows:

$$\text{openness measure} = \frac{\text{gross stock of foreign assets and liabilities}}{\text{GDP}}$$

$$= \frac{\text{gross stock of FDI and portfolio assets and liabilities}}{\text{GDP}}$$  \hspace{1cm} (2.1)

We collect quarterly data for Slovenia from 1993 to the second quarter of 2001 and show the results in Figure 2.1. Although international gross private capital flows have increased during the period, their share in GDP varied considerably over time. One should expect that an increase in the openness measure would reflect the effectiveness of abolishing of capital controls. However, we notice a huge increase in the openness measure in 1996 and only a modest increase in 1999. On the other hand, Figure 2.2 shows gross FDI flows as a share of GDP in the period. Thus, comparing both Figures, we see that a huge increase in the openness measure in 1996 was due to the increase in portfolio flows.\(^2\) Foreign investment flows in Slovenia were rising due to transforming

\(^2\)In order to better understand the relation between portfolio and direct investment, it is necessary to have in mind definitions of both investment types that are valid in Slovenia. Prior to 1997, all transactions in equity were recorded under direct investment (thus, appropriate portfolio investment was classified as direct investment capital). From 1997 onwards, direct investment was defined as at least 50 percent owned
Slovenia into market driven economy. These changes were accompanied with mass privatization, high concentration of Slovenian trade with the EU market, and development of the financial infrastructure.

Nevertheless, Figure 2.1 shows that quarterly investment flows in Slovenia were extremely volatile and thus Bank of Slovenia treated foreign portfolio flows as “hot money”. Therefore, as explained in the section on restriction measure, the central bank imposed a strict regime for such holdings. Introduction of custody accounts on February 1997 affected heavily the attitude of foreign portfolio investors towards Slovenia. This reaction was clearly seen at the Slovenian stock exchange when the prices of stock decreased sharply as seen from Figure 2.3 (relation between the portfolio investment stock and the movement of the leading stock index, BSI, on quarterly and yearly basis). However, at the beginning of 1999 regulation regarding custody accounts was partially liberalized and had a positive effect on portfolio investment flows. Consequently, the BSI index started to recover.

It is interesting to observe that portfolio investment flows decreased again in 2000, along with a decrease in stock prices. The reason for that is that foreign investors preferred to invest in equity with more than 10 percent ownership. Due to a change in definition of portfolio investment (September 1999), such type of investment was considered as foreign direct investment. An upward trend in the first half of 2001 most probably indicated positive expectations of foreign investors regarding further liberalization of portfolio investment regulations. Indeed, from July 2001, the central bank decided to completely liberalize portfolio investment in long-term securities and bonds.

Figure 2.4 shows relation between the FDI flows and BSI index on a quarterly and yearly basis. From 1997 on, there was an ongoing increase in FDI flows, accompanied with an increasing trend in stock prices (the only exception are the second and third quarters of

by foreign direct investors (from September 1999 onwards the ratio changed to 10 percent). Equity transactions pertaining to an ownership of less than 50 percent (from September 1999, less than 10 percent) are classified as portfolio investment. This change was related to the introduction of new capital control
1997, when the BSI decreased sharply due introduction of custody accounts for foreign portfolio investors). Because of a strict regulation of portfolio investment, foreign investors were more interested in investing in equity with at least 50 percent ownership share. Thus, it is not surprising that such involvement of foreign capital improved performance of Slovenian companies, which showed in increased prices of their stocks.

Although there is a tendency of increasing interest of foreign portfolio and direct investors at the Slovene market, they are still in minority. Regarding the relation between foreign investments and performance of Slovene companies (BSI Index), there is a visible improvement. However, liberalization of capital account is not enough and should be accompanied with other actions, such as privatization of sectors attractive for foreign investors (banking, telecommunications, insurance, energy, and railway sectors). Also, the forthcoming accession to the EU will improve country rating and thus create low-risk less investment opportunities.

On the other hand, we should not forget that financial liberalization without a prudent macroeconomic structure could be more damaging than beneficial for Slovenia. Thus, it is necessary coordinate policies that encourage development of the financial and the real sectors. In the next section, we are going to discuss indicators of financial deepness and show the effect of financial liberalization on economic growth.

3. Indicators of Financial Deepness

It is difficult to observe the effectiveness of capital markets in a country through a single variable. We already showed that in Slovenia there is a progress in capital account liberalization. Therefore, we expect that opening borders to international capital transactions will have a positive effect on development of financial market in Slovenia. King and Levine (1993) offer different indicators of financial development, to which they refer as financial deepness. Each of these indicators is constructed such that the increase reflects greater financial deepness. The liquid liabilities indicator of the financial system measures. Transactions in other assets and liabilities, except equity, between affiliated enterprises are
to the GDP, $LLY$, represents the ratio of liquid liabilities to GDP, where liquid liabilities consists of currency held outside the banking system plus demand bearing liabilities of banks and non-bank financial intermediaries.

This indicator reflects the overall size of the financial intermediary sector. It does not distinguish between the allocation of capital to the private sector and to various governmental and quasi-governmental agencies. In an effort to assess the relative amount of credit going to the private sector, we introduce the second indicator, $PRIVY$, which equals the ratio of claims on the non-financial private sector to GDP. This indicator reflects credit issued to the private sector alone and not to government, government agencies, and public enterprises. Our third indicator, $BANK$, represent the ratio of commercial bank domestic assets to the sum of commercial bank domestic assets and central bank domestic assets. This indicator is meant to isolate, at least partially, those financial intermediaries that are more likely to provide financial services such as risk management and information processing.

Since we are interested in the evolution of financial deepness in Slovenia, we present the average growth rates of these indicators. The average measure of $LLY$ increased by 8.1 percent, and the average measure of $PRIVY$ increased by 10.9 percent, while the average measure of $BANK$ increased only by 2.1 percent from 1993 to the first half of 2001. The general increase in the indicators of financial depth is illustrated in Figure 2.5. The definition of the $BANK$ indicator explains why the increase is so modest. Usually commercial banks act as financial intermediaries, while the role of the central bank is to monitor the monetary policy of the country. Thus, it would be surprising if this variable grew at a higher rate, because it would be a clear sign of a rigid financial system in Slovenia.

All three indicators show that Slovenia has been developing financial system during the study period. The question we want to address in the next section is whether capital account liberalization contributed to financial depth.

classified in other investment, rather than direct investment.

The data in previous two sections show a general pattern of increasing financial deepness, along with progressive capital account liberalization. However, we are interested to see whether there is any association between financial depth and liberalization of capital account. Figures 2.6a, 2.6b, and 2.6c illustrate that during the period of capital account liberalization, Slovenia had a greater increase in financial depth as measured by PRIVY or by BANK. The respective correlations in this case are 0.26 and 0.21 (each correlation is significantly different from zero). The relationship between Openness measure and LLY is less evident, although the correlation is 0.14 and still significantly different from zero. Since capital liberalization is measured as a share of gross FDI and portfolio investment flows in GDP, it is not surprising that such inflows will increase the willingness of banks to credit private sector. Consequently, there is also a higher correlation between foreign investment flows and the ratio of private banks in financial system (BANK). On the other hand, increase in foreign investment flows contributes less to a liquidity of the financial system, due to a nature of investment flows. Both, portfolio and FDI flows have a direct effect on the real sector (improvement of the companies’ performance where foreign capital is invested), and only indirect effect on the monetary sector.

However, evidence from correlations and scatterplots does not account for other factors that may influence financial depth, and also does not take into consideration joint causality. For that reason, we explore the possible effect of capital account liberalization on financial depth.

4.1 Regression Results

Our analysis explains the relationship between capital account liberalization and financial deepness and is based on the following regression:
\[ \Delta \ln FD_i = \ln \left( \frac{FD_i}{FD_{i-1}} \right) = \alpha + \beta \ln FD_{i-1} + \gamma \ln \text{KALIB}_i + \epsilon_i, \]  \hspace{1cm} (2.2)

where \( \Delta \ln FD_i \) represents growth rates of measures of financial deepness (\( LLY, PRIVY \), and \( BANK \), respectively), \( \ln FD_{i-1} \) is an initial measure of financial deepness (in a period \( i-1 \)), \( \ln \Delta \text{KALIB}_i \) is growth rate of openness measure (which represents the intensity of capital account liberalization in Slovenia), and \( \epsilon_i \) is an error term.

The inclusion of an initial measure of financial deepness, \( FD_{i-1} \), allows us to see whether there is an evidence of financial convergence over time. That means that if the country starts off with a considerably developed financial system, it does not much improvement to reach a sustainable level of financial deepness. Therefore, we expect a negative and significant value of \( \alpha \) coefficient. Financial convergence may be one channel for the convergence of per capita income (King, Levine, 1993), if economic growth is linked to financial depth. We discuss the relationship between economic growth and the change in financial deepness in Section 5.

It is important to include the initial level of financial depth in the regression equation, because otherwise we cannot obtain accurate estimates of the effect of capital account liberalization on changes in financial depth. Since we observe positive correlation between indicators of initial level of financial depth and capital account liberalization (0.15 for \( Openness \) and \( LLY \), 0.25 for \( Openness \) and \( PRIVY \), and 0.23 for \( Openness \) and \( BANK \)), the omission of \( \ln FD_{i-1} \) from equation 2.2 would cause a downward bias in the estimated coefficient capturing the effect of capital account liberalization on the change in financial depth, \( \alpha \), if financial convergence is present.

One possible concern in the estimation of the regression equation is that correlation results do not necessarily imply causation in any meaningful sense of that word. The question is whether financial deepness is caused by capital account liberalization, or is the capital account liberalization effect of a developed financial system? It is very likely that abolishing restrictions on capital account is a consequence of developed, mature and
efficient financial system. For that reason, we perform a Granger causality test,\(^3\) where we test two null hypotheses: (1) \(\Delta \ln FD_i\) does not Granger-cause \(\ln KALIB_i\), and (2) that \(\ln KALIB_i\) does not Granger-cause \(\Delta \ln FD_i\). Output from the test gives the relevant F-statistics for these two hypotheses. Results show that using different measures of financial deepness, we can reject the first hypothesis but not the second one. Therefore, we conclude that setting up the regression equation with \(\Delta \ln FD_i\) as a dependent variable, and \(\ln KALIB_i\) as explanatory variable is correct.

Table 2.1 presents regression results for three different measures of financial deepness. The estimates of \(\hat{a}\) coefficient provide strong support for financial convergence. All coefficients are negative and significant at 5 percent level. On the other hand, it is surprising to see that capital account liberalization had a positive effect on financial deepness only when measured as the ratio of credit to the private sector to GDP. In other two cases, coefficients are not significant (note that in the case of \(\Delta \ln BANK\) as dependent variable the coefficient is even negative). This could be explained by the choice of measurement of capital account liberalization. As we already mentioned, increased foreign and portfolio investment flows will not considerably influence a liquidity of financial system, because these financial flows are primarily oriented into improvement of performance of the real sector. Regarding the \(BANK\) variable, we saw that the share of private banks in Slovenian financial sector did not increase significantly during the observed period, and was already high at the beginning of 1993. Therefore, capital account liberalization did not change the structure of financial system. However, increased capital flows did have a positive effect on banks’ decisions to issue more credits to private sector. Namely, increased share of foreign capital in domestic companies shows a certain level of confidence, and it is more likely that companies will be able to repay their obligations.

\(^3\)The Granger approach to the question whether X causes Y is to see how much of the current Y can be explained by past values of Y and then to see whether adding lagged values of X can improve the explanation. Y is said to be Granger-caused by X if X helps in the prediction of Y, or equivalently if the coefficients on the lagged Xs are statistically significant. It is important to note that the statement "X Granger causes Y" does not imply that Y is the effect or the result of X. Granger causality measures
Nevertheless, these results may have potentially important policy implications. It seems that capital account liberalization may only promote financial deepness when other institutions are in place and well-functioning. King and Levine (1993) show that once the proper structure exists (as in the case of industrialized countries), capital account liberalization can significantly improve financial deepness. It would be interesting to perform such analysis in Slovenia after the privatization of the most important commercial bank, Nova Ljubljanska Banka, is finished. Also, it would be interesting to measure the openness of capital account with some indicator that would more closely reflect the abolishment of controls in all capital flows, not only in the foreign investment flows.

Table 2.1: Regression Output for Financial Depth and Capital Account Liberalization

<table>
<thead>
<tr>
<th></th>
<th>$\Delta \ln \text{FD}_i$</th>
<th>$\Delta \ln \text{LLY}_i$</th>
<th>$\Delta \ln \text{PRIVY}_i$</th>
<th>$\Delta \ln \text{BANK}_i$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\ln \text{FD}_i$</td>
<td>-0.082** (0.032)</td>
<td>-0.051** (0.026)</td>
<td>-0.108** (0.061)</td>
<td></td>
</tr>
<tr>
<td>$\Delta \text{KALIB}_i$</td>
<td>0.002 (0.003)</td>
<td>0.007** (0.003)</td>
<td>-0.003 (0.002)</td>
<td></td>
</tr>
<tr>
<td>No. of Observations</td>
<td>33</td>
<td>33</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.419</td>
<td>0.459</td>
<td>0.359</td>
<td></td>
</tr>
</tbody>
</table>

Note: ** indicates a significance at a 5 percent level. Standard errors are presented in parentheses. A constant is included in all regressions.

5. Capital Account Liberalization and Economic Growth

We try to investigate how capital account liberalization affects economic growth through its effect on financial deepness. As seen in the previous section, capital account liberalization has a statistically significant effect on financial deepness only if it is measured as a share of credits to private sector to GDP. Thus, we want to test the economic relevance of this result. First, we want to see how financial deepness affects economic growth in the standard growth regression. Then, we would like to examine precedence and information content but does not by itself indicate causality in the more common use of the term.
importance of other variables, such as inflation and trade openness, when evaluating economic growth. Last, it is difficult to establish how liberalization and financial deepness lead to economic growth. Therefore, we decompose GDP into its components and try to see if investment to GDP increases after capital market liberalization. Alternatively, we test whether capital account liberalization affects total factor productivity as the most important contributor of the GDP growth.

5.1 Effect of Financial Deepness on Economic Growth

Greater financial deepness may contribute to the welfare of the country by affecting its overall development. In his literature survey, Levine (1997) shows that there exists a positive and statistically significant relationship between financial deepness and economic growth. In order to test this relation for Slovenia, we run the following regression

\[
\Delta \ln GDP_i = \ln \left( \frac{GDP_i}{GDP_{i-1}} \right) = \alpha + \beta \ln FD_{i-1} + \gamma \ln \Delta FD_i + \delta \ln GDP_{i-1} + \epsilon_i, \tag{2.3}
\]

where \( \Delta \ln GDP_i \) represents the real GDP growth rate, \( \ln FD_{i-1} \) is an initial measure of financial deepness in a period \( i-1 \) (LLY, PRIVY, and BANK, respectively), \( \ln \Delta FD_i \) is growth rate of financial deepness, \( \ln GDP_{i-1} \) is an initial measure of the real GDP in a period \( i-1 \), and \( \epsilon_i \) is an error term.

An inclusion of the growth rate of the measure of financial deepness has important implications for estimation of \( \alpha \) coefficient. As we saw in the previous section, smaller initial values of financial depth lead to larger increases in financial deepness. If we exclude the growth of financial deepness in the regression equation, the coefficient \( \alpha \) would be downward estimated.

Regression equation 2.3 enables us to estimate effects of capital liberalization on economic growth in the same sense as discussed in previous section. However, one should be aware of possibility that higher economic growth means more developed economic system and thus causes development in financial structure. As in previous
section, we perform Granger causality test and determine that financial deepness Granger causes economic growth and not vice versa.

Another important observation is inclusion of the initial level of real GDP in equation 2.3. We expect that higher initial level of GDP imply lower growth rate, a sign of conditional convergence. Thus, we expect a negative coefficient $\bar{a}$. If we do not include this variable in the regression equation, the coefficient $\bar{a}$ that shows effect of financial deepness on economic growth would be downward estimated.

Regression results are shown in Table 2.2. As expected, an initial level of financial deepness has a positive and significant effect on economic growth regardless of the choice of financial depth. Similarly, growth rates of financial depth positively affect economic growth, only coefficient when the measure of depth is $BANK$ is statistically not significant. Initial GDP level enters in regression with a negative and significant coefficient, which confirms conditional convergence in Slovenia.

Results in this section confirm a strong relation between financial development and economic growth. However, it is hard to conclude that capital account liberalization has an important effect on economic growth,\(^4\) if this link works through financial depth. As we saw in previous section, capital account liberalization did not have a significant impact on financial depth except from the case when depth was expressed as a $PRIV$ measure. Thus, it is possible that well developed financial system positively affects growth of the economy, but financial development is not achieved through capital account liberalization. Klein and Olivei (1999) obtain similar results when they test effect of capital account liberalization on economic growth in developing countries.

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\(^4\) We run a regression where dependent variable is the real GDP growth, and two independent variables: (1) growth rate of capital account liberalization, expressed as an openness measure, and (2) initial level of real GDP. The estimates show a negative but not significant effect of capital account liberalization on economic growth.
Table 2.2: Regression output for Financial Depth and Economic Growth

<table>
<thead>
<tr>
<th></th>
<th>FD is given by LLY</th>
<th>FD is given by PRIVY</th>
<th>FD is given by BANK</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\ln FD_{i-1}$</td>
<td>0.271** (0.105)</td>
<td>0.133** (0.059)</td>
<td>0.391** (0.277)</td>
</tr>
<tr>
<td>$AFD_i$</td>
<td>0.462** (0.162)</td>
<td>0.173** (0.052)</td>
<td>0.092 (0.283)</td>
</tr>
<tr>
<td>$\ln GDP_{i-1}$</td>
<td>-0.494** (0.201)</td>
<td>-0.415** (0.147)</td>
<td>-0.274** (0.125)</td>
</tr>
<tr>
<td>No. of Observations</td>
<td>33</td>
<td>33</td>
<td>33</td>
</tr>
<tr>
<td>R$^2$</td>
<td>0.625</td>
<td>0.523</td>
<td>0.422</td>
</tr>
</tbody>
</table>

Note: ** indicates a significance at a 5 percent level. Standard errors are presented in parentheses. A constant is included in all regressions.

5.2 Macroeconomic Reforms and Economic Growth

In this section, we want to test whether adding macroeconomic variables to regression equation 2.3 significantly changes importance of development of financial system for economic growth. We choose two variables: inflation and trade openness measure (which is expressed as a ration of sum of exports and imports to GDP).

The effect of trade integration and trade liberalization on growth is the subject of a large literature. Dollar (1992), Sachs and Warner (1995a), Edwards (1998), and, more recently, Wacziarg (2000) have established that lower barriers to trade induce higher growth. Rodriguez and Rodrik (1999) have recently criticized these studies on many grounds. However, Rodriguez and Rodrik primarily question whether trade policy rather than trade volume has affected growth. Nevertheless, in our study we want to examine the effect on financial depth and not the impact of trade policy in Slovenian economy. We introduce these variables because trade volume and inflation may be affected by macroeconomic reforms aimed at stabilizing an economy. That is, the usual economic reform package involves trade reform and inflation-reducing measures.

Seeing as such macroeconomic reforms are often part of the same reform package that also liberalizes capital controls and opens up the equity market to foreign investment, our liberalization effect may simply be a proxy for the macro-economic effect. Figure 2.7
shows the trade openness measure indicator from 1993 to 2001. Throughout all the study period, Slovenia was extremely open; on average, share of exports and imports to GDP was 104.5 percent. The main reason for that was that there were no restrictions on current account transactions throughout the observed period. Moreover, since 1993, Slovenia signed a lot of free-trade agreements (and, most important, an association agreement with the EU), which reduced existing trade barriers to a negligible level. Thus, it would not be surprising to see a small effect of trade openness to the real GDP growth in Slovenia.

We expect that the other macroeconomic variable, inflation, should have a negative effect on growth rate. Usually, producers will decide to increase their production if it is accompanied with increase in prices. However, if this higher production cannot be absorbed through greater consumption (private or government) or investment (and thus greater GDP growth), increase in prices will have inflationary pressures. Figure 2.8 shows that inflation was rapidly decreasing from 1993 to 1999 an then slowly picked up. However, it did not exceed the two-digit level. Thus, Slovenia was having a stable price policy, which should be reflected in a higher economic growth.

Table 2.3 augments the regression in Table 2.2 by adding trade and inflation variables. Surprisingly, in all regressions, coefficients on trade openness are positive but not significant. This confirms our expectations about the minor effect of trade openness to the GDP growth. On the other hand, coefficients for inflation are unexpectedly positive (not in the case when financial deepness is measures as BANK indicator), but not significant. Thus, inflation has an ambiguous effect on economic growth. However, important observation is that adding these two variables does not change the size of the effect of financial depth and initial GDP level on economic growth.

It seems that macroeconomic reforms, if measured in terms of inflation and trade openness do not contribute to the GDP growth during the observed period, or at least they do not diminish the contribution of financial deepness to economic growth. Therefore, the strong macroeconomic basis in the country was built prior to 1993.
Table 2.3: Regression output for Financial Depth and Economic Growth Including Macroeconomic Variables

<table>
<thead>
<tr>
<th></th>
<th>FD is given by LLY</th>
<th>FD is given by PRIVY</th>
<th>FD is given by BANK</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\ln FD_{i-1}$</td>
<td>0.297** (0.131)</td>
<td>0.174** (0.101)</td>
<td>0.335** (0.332)</td>
</tr>
<tr>
<td>$\ln AFD_{i}$</td>
<td>0.450** (0.167)</td>
<td>0.101** (0.084)</td>
<td>0.082 (0.323)</td>
</tr>
<tr>
<td>$\ln GDP_{i-1}$</td>
<td>-0.521** (0.211)</td>
<td>-0.451** (0.164)</td>
<td>-0.275** (0.128)</td>
</tr>
<tr>
<td>$\ln A Trade_{i}$</td>
<td>0.055 (0.066)</td>
<td>0.067 (0.074)</td>
<td>0.048 (0.078)</td>
</tr>
<tr>
<td>Inflation$_{i}$</td>
<td>0.001 (0.001)</td>
<td>0.001 (0.002)</td>
<td>-0.001 (0.002)</td>
</tr>
<tr>
<td>No. of Observations</td>
<td>33</td>
<td>33</td>
<td>33</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.638</td>
<td>0.544</td>
<td>0.437</td>
</tr>
</tbody>
</table>

Note: ** indicates a significance at a 5 percent level. Standard errors are presented in parentheses. A constant is included in all regressions.

5.3 Capital Account Liberalization and Investment Share of GDP

Since it is hard to estimate how capital account liberalization (through financial deepness indicators) leads to economic growth, we take a closer look to investment component of GDP. We believe that capital flowing in the country after liberalization will increase investment.

We test this hypothesis by running the similar regression to the one presented in the previous section in equation 2.3:5

$$\Delta \ln(1/\text{GDP})_i = \ln\left(\frac{(1/\text{GDP})_i}{(1/\text{GDP})_{i-1}}\right) = \alpha + \beta \ln FD_{i-1} + \gamma \ln \Delta FD_i + \delta \ln(1/\text{GDP})_{i-1} + \varepsilon_i, \quad (2.4)$$

where $\Delta \ln(1/\text{GDP})_i$ represents the real investment to GDP ratio growth rate, $\ln FD_{i-1}$ is an initial measure of financial deepness in a period $i-1$, $\text{LLY, PRIVY, and BANK}$,

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5 In equation 2.4 we do not include variables that represent macroeconomic reforms, because the coefficients were not significant in case of explaining real GDP growth in Slovenia.
respectively), $ln \ AFD_i$ is growth rate of financial deepness, $ln \ (I/GDP)_{i-1}$ is an initial measure of the investment to GDP in a period $i-1$, and $\hat{\epsilon}_i$ is an error term. Results are presented in Table 2.4 and they suggest that financial depth is associated with significantly higher investment to GDP ratios.\textsuperscript{6}

Table 2.4: Regression output for Financial Depth and Investment to GDP Ratio

<table>
<thead>
<tr>
<th></th>
<th>$FD$ is given by LLY</th>
<th>$FD$ is given by PRIVY</th>
<th>$FD$ is given by BANK</th>
</tr>
</thead>
<tbody>
<tr>
<td>$ln \ FD_{i,1}$</td>
<td>0.257** (0.095)</td>
<td>0.063* (0.043)</td>
<td>0.160* (0.129)</td>
</tr>
<tr>
<td>$AFD_i$</td>
<td>0.013 (0.141)</td>
<td>0.050 (0.132)</td>
<td>0.551** (0.201)</td>
</tr>
<tr>
<td>$ln \ (I/GDP)_{i-1}$</td>
<td>-0.438** (0.145)</td>
<td>-0.171* (0.115)</td>
<td>-0.100* (0.084)</td>
</tr>
<tr>
<td>No. of Observations</td>
<td>33</td>
<td>33</td>
<td>33</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.521</td>
<td>0.385</td>
<td>0.486</td>
</tr>
</tbody>
</table>

Note: ** and * indicate a significance at a 5 percent and 10 percent levels, respectively. Standard errors are presented in parentheses. A constant is included in all regressions.

It is interesting to observe that coefficients on the initial level of financial deepness (regardless of the measure of financial depth) are always significant at either 5 or 10 percent levels. On the other hand, coefficients on the growth rate of financial deepness are always positive, but only significant when the measure of financial depth is given by the BANK variable. As expected, coefficients on the initial investment to GDP ratio level are negative and significant. This again confirms conditional convergence in Slovenia.

Thus, financial liberalization is important for increased investment in Slovenia, regardless of the measurement choice variable (either financial deepness variables or openness measure as direct indicator of capital account liberalization).

\textsuperscript{6} We also run a regression with investment to GDP ratio growth rate as dependent variable and two independent variables: (1) growth rate of capital account liberalization, expressed as an openness measure,
6. Concluding Remarks

In this part of research, we saw that during the observed period capital account liberalization had a positive effect on financial deepness only when measured as the ratio of credit to the private sector to GDP. When financial dept is measured as the ratio of liquid liabilities to GDP or as a share of deposit money bank assets in the total financial system, there is improvement in the system after capital account liberalization.

Therefore, capital account liberalization did not change the structure of financial system. The only benefit was a positive effect of increased capital flows on banks’ decisions to issue more credits to private sector. Namely, increased share of foreign capital in domestic companies shows a certain level of confidence, and it is more likely that companies will be able to repay their obligations.

Nevertheless, these results may have potentially important policy implications. It seems that capital account liberalization may only promote financial deepness when other institutions are in place and well-functioning.

On the other hand, we see that financial development has a significant and positive effect on economic growth, as well as on investment in Slovenia. However, it is not correct to conclude that also capital account liberalization positively affects economic growth if it is measured through financial depth. It is possible that well developed financial system positively affects growth of the economy, but financial development is not achieved through capital account liberalization. It is more likely that capital account liberalization comes in the country at the late stage, when adequate macroeconomic policies and institutions are already in place.

and (2) initial level of real GDP. The estimates show a positive and significant effect of capital account liberalization on economic growth.
7. References

Figure 2.1: Openness Measure (Sum of FDI and Portfolio Assets and Liabilities as a Share of GDP), Quarterly and Yearly Data: 1993-2001

* quarterly measure on the left scale, yearly measure on the right scale
Source: Bank of Slovenia, Authors’ calculations.

Figure 2.2: FDI Assets and Liabilities as a Share of GDP, Quarterly and Yearly Data: 1993-2001

* quarterly measure on the left scale, yearly measure on the right scale
Source: Bank of Slovenia, Authors’ calculations.
Figure 2.3a: The Relation Between the BSI and Portfolio Investment Flows, yearly data: 1993-2000

* BSI Index on the left scale, Portfolio Investment Flows on the right scale

Source: Bank of Slovenia, Ljubljana Stock Exchange, Authors’ Calculations.

Figure 2.3b: The Relation Between the BSI and Portfolio Investment Flows, quarterly data: 1993-2001
Figure 2.4a: The Relation Between the BSI and Foreign Direct Investment Flows, yearly data: 1993-2000

Figure 2.4b: The Relation Between the BSI and Foreign Direct Investment Flows, quarterly data: 1993-2000

* BSI Index on the left scale, Foreign Direct Investment Flows on the right scale
Source: Bank of Slovenia, Ljubljana Stock Exchange, Authors’ Calculations.
Figure 2.5: Indicators of Financial Depth, quarterly data: 1993-2001

Source: Bank of Slovenia, UMAR, Authors’ Calculations.

Figure 2.6: Association Between Capital Account Liberalization and Indicators of Financial Deepening

A. Private Bank Ratio
B. Domestic Credit/GDP

C. Liquid Liabilities/GDP

Source: UMAR, Authors’ Calculations.
Figure 2.7: Trade Openness Measure (Sum of Exports and Imports as a Share of GDP), Quarterly and Yearly Data: 1993-2001

* quarterly measure on the left scale, yearly measure on the right scale
Source: Bank of Slovenia, Authors’ calculations.

Figure 2.8: Inflation Measure: Quarterly and Yearly Data (1993:2001)

* quarterly measure on the left scale, yearly measure on the right scale (data labels are for the yearly series)
Source: Bank of Slovenia, Authors’ calculations.