

Tunisia: Selected Issues

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TUNISIA

Selected Issues

Prepared by Jacques Bouhga-Hagbe and Ludvig Söderling (MCD)

Approved by Middle East and Central Asia Department

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	Contents	Page
I.	Tunisia: Potential Growth-Enhancing Effects of Further Capital Account Liberalization and Supporting Reforms	2
A.	Introduction.....	2
B.	Capital Account Liberalization and Supporting Reforms: Progress Achieved and the Remaining Steps	3
C.	The Potential Growth Benefits of Further Capital Account Liberalization and Supporting Reforms.....	5
D.	Conclusion	7
	Chart	
1.	FDI and Portfolio Investment	7
	Tables	
1.	Sequence of Capital Account Liberalization	9–11
2.	Selected Countries' Balance of Payment Flows, 2004	12
3.	Selected Countries' Balance of Payment Flows, 1995-2004 Average	12
	References.....	8
II.	Business Cycle Accounting in Tunisia	13
A.	Introduction.....	13
B.	Analytical Framework: Business Cycle Accounting	14
C.	Conclusions.....	17
D.	Appendix: Description of the Model	18
	Figures	
1.	Tunisia: Wedges.....	15
2.	Tunisia: Equilibrium Impact of Wedges.....	16

I. TUNISIA : POTENTIAL GROWTH-ENHANCING EFFECTS OF FURTHER CAPITAL ACCOUNT LIBERALIZATION AND SUPPORTING REFORMS¹

A. Introduction

1. **Capital account liberalization is a key element of the Tunisian authorities' strategy for reaching emerging market OECD countries income levels and reducing unemployment.** The authorities are gradually opening the capital account in order to tap external savings, diversify balance of payments financing, allow for portfolio diversification, and improve the efficiency of domestic financial markets.
2. **The purpose of this paper is to illustrate progress made by the Tunisian authorities in their efforts to liberalize the capital account and highlight the potential benefits of implementing the remaining reforms in this area.** Key reforms have been achieved in support of capital account liberalization: (i) the authorities have established a track record of sound macroeconomic policies; (ii) the prudential framework for the financial sector has been strengthened; (iii) a modern legal framework has been established; (iv) the infrastructure for the capital market has been developed; (v) some restrictions on the holding of foreign exchange by residents, and on foreign investment have been removed and conditions on external borrowing both by banks and firms have been relaxed; (vi) the trade regime has been significantly liberalized; and (vii) significant progress has been made toward the strengthening of the systemic liquidity framework.
3. **Despite progress achieved in the area of capital account liberalization, there remains sizeable room for further reforms to maximize the potential benefits of liberalization.** There are many opportunities for further reform. In particular, the strengthening of the banking system and the systemic liquidity framework, as well as a reduction of the level of external public debt are required before the implementation of most of the remaining agenda for capital account liberalization.
4. **Recent evidence suggests that capital account liberalization does not only allow a diversification of the balance of payments financing sources, but could also contribute to boosting foreign direct investment by accelerating the development of financial markets.** The implementation of supportive measures to move forward with further capital account liberalization are part of the authorities' objective to develop domestic financial markets and attract foreign investment to boost growth.

¹ Prepared by Jacques Bouhga-Hagbe.

B. Capital Account Liberalization and Supporting Reforms : Progress Achieved and the Remaining Steps

The capital account liberalization process: description and progress achieved

5. **The Tunisian authorities have developed, in consultation with staff, a three-phase plan to liberalize the capital account²:**

- The **first phase** consists of reforms aimed at liberalizing medium to long-term flows such as nonresident direct investments and long-term loans to listed firms, limited nonresident investments in local currency government securities, and other measures to enhance the overall effectiveness of financial intermediation and diversify the balance of payments financing sources.
- The **second phase** involves liberalizing direct investment by Tunisians abroad, allowing overseas portfolio investments by institutional investors and portfolio investments by nonresidents in debt instruments. This stage includes a transition to a floating exchange rate, a deepening of the foreign exchange market, and a banking system that is sufficiently strong to withstand international competition. Progress would also be needed in the development of government securities markets to increase market liquidity.
- The **third phase** involves full currency convertibility. It entails liberalizing domestic portfolio investment abroad and loans by residents to nonresidents. Moving to this stage would require a robust financial sector and a resilient balance of payments position.

6. The main measures of this capital account liberalization strategy, as well as the status of their implementation are summarized in Table 1.

7. **The first phase of the capital account liberalization process in Tunisia is almost complete.** The surrender requirement of foreign exchange proceeds has been eliminated. Regulations on foreign exchange holdings in Tunisian banks have been relaxed. Restrictions on inward nonfinancial foreign direct investment have been lifted. Foreigners may invest freely in most economic sectors. The approval of the High Investment Commission is no longer required for the acquisition by foreign nationals of Tunisian securities entailing voting rights. The authorities have allowed nonresident investment in local-currency government securities, subject to a ceiling of 10 percent of the outstanding stock. Resident financial institutions can now contract foreign currency loans from nonresidents in maturities of over 12 months without limits (previously, TD 10 millions a year). Rated resident companies can contract such loans up to an annual limit of the equivalent of TD 10 millions (previously TD 3 millions a year). For short-term foreign currency loans, borrowing limits have been significantly increased for both financial institutions and corporations. The liberalization of

² For a more detailed discussion, see Laurens and Sarr (2002).

external borrowing was accompanied by a relaxation of the regulation on foreign exchange lending to corporations.

The capital account liberalization process: the remaining steps

8. **In order to further deepen the foreign exchange market, which is an important requirement of the capital account liberalization process, the authorities could speed up the abolishment of the *nivellement* policy** by which banks must transfer all their correspondent account foreign exchange holdings to the BCT at the end of the day. While this policy allows the BCT to manage the foreign exchange reserves of the private sector by placing them on international markets, it is not conducive to building the corresponding skills at the commercial banks. Eliminating this requirement would enhance competition for exporters' deposits as banks will be able to manage these deposits more effectively. As banks gain experience in managing foreign exchange assets, they could, in turn transfer this experience to the local foreign exchange market. The BCT could continue to closely monitor banks' foreign exchange operations to ensure that there is no unauthorized capital movements.

9. **Moving to the second phase of the authorities' capital account liberalization plan will also require :**

- **strengthening the banking system.** The recent Financial System Assessment Program (FSAP) update mission indicated that the high level of non-performing loans (NPLs) remained the key vulnerability of the Tunisian banking system, although they do not constitute a systemic risk. Other factors contributing to its weakness include a lack of reliable financial data on enterprises, weaknesses in loan recovery, especially in the realization of collateral, and the relatively limited role of asset management companies.
- **addressing the remaining shortcomings in the systemic liquidity framework.** On the money market, daily average turnover remains low and interest rates mirror those on BCT operations, with limited volatility within a narrow corridor. On the securities market, the Treasury bill holdings in the BCT portfolio have been modest, thus limiting the volume of open market operations. Furthermore, the maturity range of government securities has not been wide enough to help build a full yield curve. On the foreign exchange market, restrictions remain on forward operations and foreign exchange options. These shortcomings hamper further progress toward an open capital account as they constitute obstacles to capital markets development. Indeed, if a full opening of the capital account were to lead to large capital flows, the lack of preparedness of commercial banks, or more generally participants in the money and foreign exchange

markets, which would be called to intermediate these flows could exacerbate the vulnerabilities in the financial system in the event of a sudden reversal.

- **reducing the level of external debt.** If capital flows were to be fully liberalized, the amount of foreign exchange needed to service the current level of the external debt (68 percent of GDP at end 2005) could put significant pressures on the foreign exchange market, and could affect the credibility of the current exchange rate regime.

C. The Potential Growth Benefits of Further Capital account Liberalization and Supporting Reforms

10. **It is difficult to isolate the growth impact of reforms aimed at capital account liberalization.** In theory, there are reasons to expect capital account liberalization to have a positive impact on a country's growth performance. Capital mobility lowers the cost of capital, reduces the cost of transferring technology and management know-how to the host country, and facilitates greater competition and the development of domestic financial markets. Moreover, liberalization of capital flows typically boost foreign direct investment, which enhances growth prospects. It facilitates consumption smoothing by allowing consumers to borrow when their incomes fall and repay when their income rises, thus promoting longer term economic stability. It also leads to portfolio diversification, which helps the development of financial markets and allows for risk-sharing among investors, thus contributing to financial stability. Despite these theoretical benefits, empirical evidence on the general impact of capital account liberalization on economic growth is inconclusive. Part of the reason for this is the fact that capital account liberalization is often an element of a more broad-based reform package. In addition, difficulties in defining appropriate measures of liberalization reduce the scope of any analysis aimed at isolating the direct or indirect effects of capital account liberalization on growth³. Another important reason why empirical studies have generally failed to detect a strong positive correlation between capital account liberalization and growth is that many countries liberalized their capital account when they were not ready⁴. Even when countries are ready, capital account liberalization carries risks which could destabilize financial systems if regulatory frameworks are not adequate and if supervision is weak.

11. **Despite difficulties in finding appropriate measures of the degree of capital account liberalization, the magnitude of portfolio investment flows could give a fairly good idea of a country's remaining restrictions on capital flows.** Given the fact that most countries have liberalized most foreign direct investment flows, the size of portfolio investment flows is a good indicator of a country's remaining restrictions on capital flows. In

³ For further discussion, see International Monetary Fund 2005, Eichengreen 2001, Edison et al. 2004, and Forbes 2004.

⁴ For further discussion on countries' experiences in the sequencing and coordination of capital account liberalization with other policies, see International Monetary Fund 2002.

Table 2 and Table 3, portfolio flows to and from Tunisia are relatively low, consistent with the fact that capital flows to Tunisia remain relatively restricted. For example, in 2004 and during the period 1995-2004, portfolio flows were on average less than 0.1 percent of GDP in Tunisia.

12. **Recent experiences from selected countries suggest that capital account liberalization has helped ease the constraints on the financing of balance of payments (BOP), and therefore supported investment.** An analysis of selected countries' balance of payments flows shows that portfolio investment flows can play an important complementary role to the financing of a country's current account deficit. In 2004 for example, the contribution of portfolio investment liabilities flows to the financing of the current account deficit has been close to or above the contribution of foreign direct investment in the Czech Republic, Hungary, Mexico, Poland, Portugal, and Turkey (Table 2). Portfolio flows have clearly provided some flexibility to these countries in the financing of their trade and current account deficits. It is worth mentioning however that foreign direct investment (FDI) has the advantage of not augmenting external debt and tends to be more stable. This point is particularly important for Tunisia, which already has a high level of external debt.

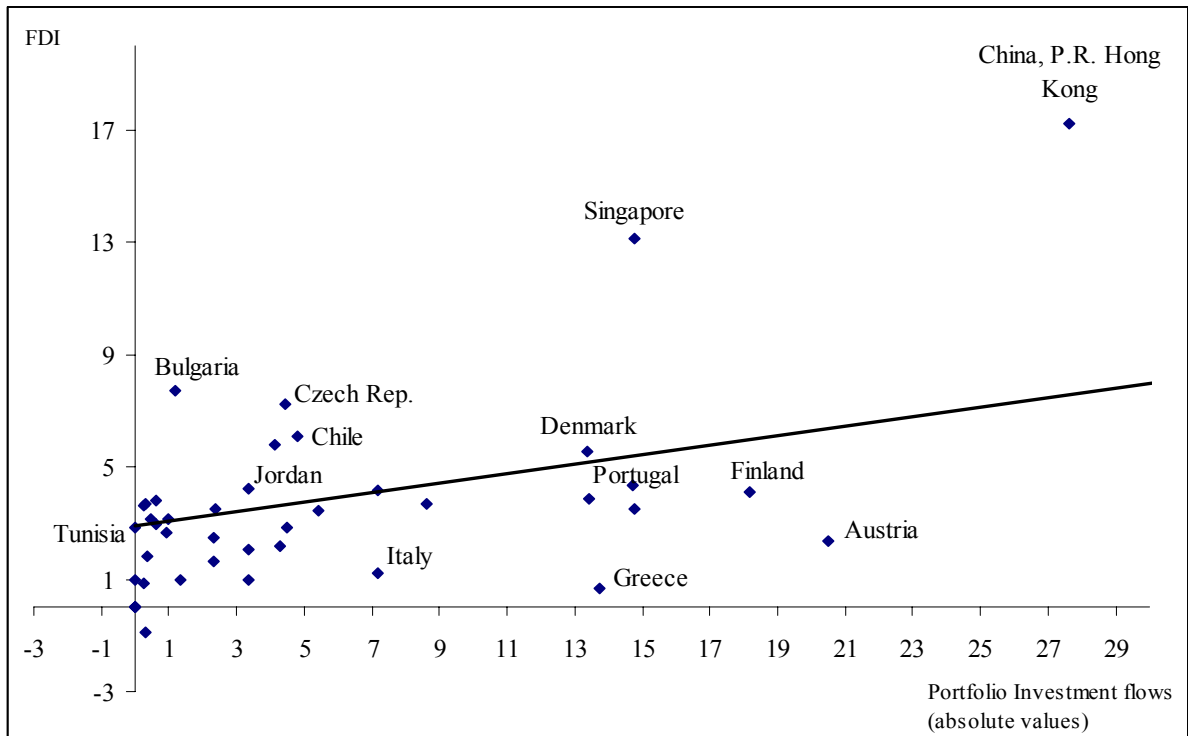
13. **Recent experience also suggests that the degree of openness to portfolio flows tends to be positively correlated with FDI.** In order to capture a country's openness to portfolio flows, one can consider the magnitude of the sum of the absolute values of portfolio assets and liabilities flows. A country is more open to portfolio flows when it allows relatively large amounts of portfolio flows in either direction. The indicator of openness to portfolio investment used is based on the ratio of this sum to the country's GDP to adjust for the size of the economy⁵. Using this indicator, recent experience suggests that openness to portfolio investment tends to be positively correlated to the level of foreign direct investment (Chart 1).

14. **Although the positive correlation between the degree of openness to portfolio flows and FDI does not necessarily imply a causal relationship, it supports the view that capital account liberalization could boost FDI by accelerating the development of financial markets, and so enhancing the attractiveness of an economy.** The positive correlation between the degree of openness to portfolio flows and foreign direct investment that is illustrated in Chart 1 could also reflect the fact that countries that open portfolio flows tend to have relatively developed financial markets. These markets could offer various flexible sources of financing to investors, thus providing them with the necessary incentives

⁵ One should note that this indicator of a country's restrictiveness to capital flows has significant drawbacks. When one adjusts for the size of the economy, some countries such as the US that are open to portfolio flows end up with a value of the indicator that is relatively low because their GDP is very large compared to the size of their portfolio flows. However, if one does not adjust for the size of the economy, the indicator used could be misleading as larger economies are likely to have larger volumes of portfolio flows without necessarily having fewer capital account restrictions. The indicator used has the advantage of being relatively simple, and is considered only for illustrative purposes.

to invest their capital in these countries, including in the form of equity. However, a deeper analysis is needed to fully understand the relationship between the degree of openness to portfolio flows and FDI.

Chart 1. FDI and Portfolio Investments
(In percent of GDP, average 2000-2004 or latest year available)



Source: IMF staff estimates.

D. Conclusion

15. **The authorities are implementing a broad-based reform agenda in which increasing openness to the rest of the world economy is an important pillar, and evidence supports the view that capital account liberalization will help Tunisia reach its growth objectives.** Significant progress has been made toward an open capital account. However, additional reforms are needed to further liberalize the capital account, deepen financial markets and boost investment. Increased momentum in the implementation of these reforms will be essential to bringing Tunisia to a higher-growth path.

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Table A1. Sequence of Capital Account Liberalization

Item	Measure	Level of priority, status of implementation, and Comments 1/
First phase		
Surrender requirement	Eliminate.	<p>Priority : 1 Status : complete Effective January 3, 2005, resident exporters may retain in their professional accounts up to 100 percent (previously 70 percent) of their foreign exchange export proceeds and their foreign currency loans contracted in accordance with existing exchange regulations. Providers of service exports were allowed to deposit their proceeds in the accounts on March 7, 2005.</p>
Foreign exchange accounts Residents	Allow all residents to keep foreign exchange holdings in domestic banks and align rules on those in place for nonresident accounts.	<p>Priority : 1 Status : complete Various types of bank accounts in which residents and nonresidents can keep their foreign exchange holdings are available. Exporters can now deposit 100 percent of their proceeds and foreign currency loans in such accounts.</p>
Foreign direct investments Inward (nonfinancial sector)	Fully liberalize underlying transactions (including for equity mutual funds). Limitations on sectors related to national security may be maintained.	<p>Priority : 1 Status : almost complete Foreigners may invest freely in most economic sectors. Effective March 14, 2005, the approval of the High Investment Commission (HIC) is no longer required for the acquisition by foreign nationals of Tunisian securities entailing voting rights or shares of companies established in Tunisia. However, foreign direct investment in mass marketing is still subject to authorization. Nonresidents may acquire freely shares of Tunisian mutual funds with foreign exchange transferred from abroad. However, the approval of the HIC is required if the acquisition raises the foreign ownership to more than 50 percent of mutual fund's capital.</p>
Inward (financial sector)	Can be opened on case-by-case basis.	<p>Priority : 2 Status : ongoing Full opening requires placing banks on sound footing and bringing intermediation costs to levels prevailing in advanced financial markets.</p>
Portfolio equities	Fully liberalize underlying transactions.	<p>Priority : 1 Status : complete Effective March 14, 2005, the approval of the High Investment Commission (HIC) is no longer required for the acquisition by foreign nationals of Tunisian securities entailing voting rights or shares of companies established in Tunisia.</p>
Domestic debt instruments-ST Inward	Allow direct purchases on limited basis.	<p>Priority : 2 Status : ongoing The purchase by nonresidents foreign nationals of debt securities issued by state or resident companies is subject to approval, with the exception of treasury bills, to which they may subscribe, effective July 1, 2004, up to a limit of 5 percent each issue. This step requires a strengthening of systemic liquidity arrangements (including the government securities market) to prepare for a full opening in the second phase of the liberalization process.</p>

Table 1. Sequence of Capital Account Liberalization

Item	Measure	Level of priority, status of implementation, and Comments 1/
Borrowing abroad-MT/LT Inward	Free borrowing abroad for listed or rated companies, while preventing excessive foreign exchange risk taking by Tunisian corporations.	Priority : 1 Status : almost complete Effective January 4, 2005, rated resident companies may freely contract foreign currency loans from nonresidents in maturities of over 12 months up to an annual limit of the equivalent of TD 10 millions (previously, TD 3 million a year). It is not yet clear whether this new limit is binding.
Commercial and financial credits Inward	Allow gradual liberalization.	Priority : 1 Status : almost complete Resident financial institutions and other resident enterprises may freely contract foreign currency financial loans from nonresidents up to an annual limit of the equivalent of D 10 million and D 3 million, respectively. Full opening requires bringing bank intermediation costs to levels prevailing in advanced financial markets. Limits could be gradually increased to maintain competitive pressure on banks. It is not yet clear whether the current limits are binding.
Commercial banks "Nivellement"	Eliminate. In tandem, BCT discontinues posting bid/ask prices to banks on the foreign exchange market.	Priority : 1 Status : ongoing The BCT is considering the repeal of the "nivellement" policy by which banks must surrender their foreign exchange daily. Eliminating this measure will help deepen the foreign exchange market, and help develop banks' skills in the management of foreign exchange. The BCT announces bid and ask rates around mid-day based on actual transactions in the market. However, these rates are usually published well after most of the trading has taken place on the foreign exchange interbank market.
External borrowing	Free borrowing abroad for listed banks, and implement a prudential framework to measure and limit liquidity mismatch (maturity ladder).	Priority : 1 Status : complete Effective January 4, 2005, resident financial institutions may contract foreign currency loans from nonresidents in maturities of over 12 months without limits (previously, TD 10 million a year).
Financial credits in foreign exchange to corporations	Allow banks to grant financial credits in foreign exchange to resident corporations.	Priority : 1 Status : almost complete Resident banks may freely finance on the foreign exchange money market the import and export activities of resident entities. They may also lend their foreign currency surpluses to other resident banks and to their correspondent banks in exchange for loans with the same maturity in another currency. Some limited coverage of risk is provided to the corporate sector by banks on the forward interbank foreign exchange market.
Open position limit	Consider raising overall limit to 30 percent of capital.	Priority : 2 Status : ongoing Net open positions of banks operating in the foreign exchange market resulting from both spot and forward transactions are limited to 10% of banks' net own funds in each currency, with a global limit of 20% for positions in all currencies. Increasing these limits will help develop the foreign exchange market.

Table 1. Sequence of Capital Account Liberalization (concluded)

Item	Measure	Level of priority, status of implementation, and Comments 1/
Second phase		
Foreign direct investments		
Inward (financial sector)	Allow full opening.	Priority : 3 Status : ongoing This measure requires placing banks on sound footing and bringing intermediation costs to levels prevailing in advanced financial markets.
Outward (non financial sector)	Allow full opening.	Priority : 3 Status : ongoing The accumulation of assets abroad by residents is subject to authorization. However, effective February 16, 2005, resident exporters may transfer the equivalent of D 60,000 to D 300,000 (previously, D 40,000 to D 200,000) a year to finance equity participation in companies located abroad; non-exporting companies are permitted to transfer funds abroad for equity participation up to D 20,000 (previously, D 10,000) to D 100,000. The holders of some types of accounts in foreign currency or convertible dinars may purchase securities abroad by debiting these accounts. Monitoring will be necessary to prevent disguised portfolio investments.
Portfolio investments		
Inward	Allow full opening.	Priority : 3 Status : ongoing This measure requires robust systemic liquidity arrangements and government securities market.
Institutional investors		
Outward investments	Allow within annual limit (to be increased gradually) and prudential rules to ensure soundness of investments.	Priority : 3 Status : ongoing Institutional investors are allowed to purchase bonds and other debt securities on a limited basis. Portfolio diversification will help reduce systemic risk and accelerate foreign exchange market development.
Third phase		
Portfolio investments		
Outward	Allow full opening.	Priority : 4 Status : ongoing This measure requires compliance with best international practices, sound macroeconomic framework and robust systemic liquidity frameworks.
Commercial, financial credits		
Outward	Allow full opening.	Priority : 4 Status : ongoing These credits currently require approval from the BCT, except for credits in foreign currency granted on the money market to refinance import or export operations of nonresident industrial enterprises established in Tunisia and short-term credits in dinars to finance the local operating expenses of nonresident enterprises established in Tunisia.
Institutional investors		
Outward investments	Allow full opening within prudential limits.	Priority : 4 Status : ongoing Prudential rules may be maintained to ensure soundness of investments.
Commercial banks		
Lending to nonresidents	Allow full opening.	Priority : 4 Status : ongoing This measure will require a full convertibility of the dinar.

1/ The level of priority is for the whole process of capital account liberalization. Measures with smaller numbers have a higher priority.

Table 2. Selected Countries' Balance of Payment Flows, 2004

	Chile	Czech Rep.	Hungary	Ireland	Korea	Mexico	Poland	Portugal	Singapore	Tunisia	Turkey
In percent of GDP											
Current Account	1.5	-5.2	-8.8	-0.8	4.1	-1.1	-4.1	-7.8	25.9	-2.0	-5.1
Capital and Financial Account	-0.3	5.9	10.2	3.2	-4.5	1.4	3.3	8.7	-23.4	2.1	4.2
Financial Account, net	-0.4	6.4	9.9	2.9	-4.2	1.4	2.9	7.0	-23.2	1.7	4.2
Direct Investment, net	7.1	3.6	3.5	-2.6	0.5	2.1	4.7	-3.1	5.1	2.1	0.6
Direct Investment in the economy	8.1	4.1	4.6	6.0	1.2	2.6	5.0	0.5	14.9	2.1	0.9
Portfolio investment, net	-3.6	2.2	6.9	-4.9	1.4	1.1	3.8	1.1	-10.6	0.1	2.7
Portfolio investment assets, net	-4.8	-2.3	-0.4	-91.4	-1.4	0.3	-0.5	-6.8	-12.7	0.0	-0.5
Portfolio investment liabilities, net	1.2	4.5	7.3	86.5	2.8	0.9	4.3	7.9	2.2	0.1	3.1
Reserve assets, net	0.2	-0.2	-2.0	0.8	-5.7	-0.6	-0.3	1.1	-11.2	-3.5	-0.3
Net errors and omissions	-1.1	-0.7	-1.5	-2.4	0.4	-0.3	0.8	-0.8	-2.6	-0.1	0.9

Source: Tunisian authorities and IMF staff estimates.

Table 3. Selected Countries' Balance of Payment Flows, 1995-2004 average

	Chile	Czech Rep.	Hungary	Ireland	Korea	Mexico	Poland	Portugal	Singapore	Tunisia	Turkey
In percent of GDP											
Current Account	-1.9	-4.8	-6.6	0.6	2.1	-2.0	-3.4	-6.8	19.1	-3.2	-1.6
Capital and Financial Account	2.5	4.6	6.5	0.2	-1.8	2.2	3.3	7.2	-19.7	3.2	1.3
Financial Account, net	2.5	4.6	6.2	-0.6	-1.7	2.2	3.2	5.7	-19.5	2.9	1.3
Direct Investment, net	4.4	6.0	5.9	7.6	0.2	2.8	3.3	-0.5	4.3	2.4	0.5
Direct Investment in the economy	6.5	6.2	6.6	12.2	1.0	3.0	3.4	2.5	13.3	2.4	0.7
Portfolio investment, net	-1.3	0.2	2.4	-12.4	1.8	0.7	1.2	0.1	-12.6	0.1	0.1
Portfolio investment assets, net	-3.0	-1.7	-0.2	-64.7	-0.6	0.1	-0.1	-6.2	-13.5	0.0	-0.6
Portfolio investment liabilities, net	1.7	1.9	2.7	52.3	2.4	0.6	1.3	6.2	1.0	0.1	0.6
Reserve assets, net	-0.2	-2.9	-1.5	-0.2	-3.2	-1.2	-1.5	0.2	-6.2	-1.2	-1.4
Net errors and omissions	-0.6	0.2	0.1	-0.9	-0.3	-0.2	0.1	-0.5	0.6	0.0	0.3

Source: Tunisian authorities and IMF staff estimates.

II. BUSINESS CYCLE ACCOUNTING IN TUNISIA⁶

A. Introduction

16. The overriding medium-term objectives for Tunisia's economic policy are to increase income per capita to emerging market OECD levels and substantially reduce unemployment. To approach these goals, Tunisian authorities have followed a broad growth strategy aiming at increasing productivity, investment and employment. Notably, they began liberalizing trade in the context of an Association Agreement with the European Union in the mid-1990s, and they have invested significantly in education, health, and infrastructure. They have also strived to reduce rigidities in the labor market in recent years, e.g. by introducing temporary job contracts and by facilitating matching between employers and job seekers. Moreover, they have followed an active investment promotion policy, including through tax incentives, especially for the export sector.

17. These policies have contributed to placing Tunisia's economic performance among the best in the region. In particular:

- GDP per capita growth picked up strongly in the mid 1990s, averaging about 3½ percent over the past decade.
- The unemployment rate began falling around 1999, after remaining stubbornly high during the previous decade.⁷ The rate fell by nearly 2 percentage points during 1999-2005 (to 14.3 percent).
- Meanwhile, the share of non-government investment in GDP has not shown a clear trend in the past decade. In fact, it increased somewhat in the second half of the 1990s, but has declined in recent years.

18. The purpose of this paper is to shed some light on these developments within a unified analytical framework and provide tentative insights regarding priorities for the government's growth strategy going forward. In particular, the paper will discuss the impact of ongoing labor market reforms and investment promotion policies.

⁶ Prepared by Ludvig Söderling.

⁷ Due to a recent change in methodology, to follow ILO standards, there is a break in the unemployment series in 1999, complicating comparisons of levels before and after 1999. It is clear, however, that the declining trend in unemployment began around 1999.

B. Analytical framework: Business Cycle Accounting

19. Business Cycle Accounting, developed by Chari, Kehoe, and McGrattan (2004),⁸ is a simple framework for analyzing the sources of business cycle fluctuations. This methodology is useful for identifying, within a unified framework, the dominating frictions within the economy. The paper uses this approach to identify the main impediments to growth. The underlying model is a standard neoclassical growth model, in which a number of time-varying ‘wedges’ (each representing different types of distortions) are introduced (the appendix explains the model in more detail). The key wedges are a productivity wedge, a labor wedge, and an investment wedge.⁹

20. To see how these wedges work, consider a standard neoclassical growth model, with a representative consumer optimizing lifetime utility, derived from consumption and leisure. The consumer faces two decisions: (a) how much to work in each period (consumption-leisure trade-off); and (b) how much to consume or save for future consumption (intertemporal consumption optimization). The labor wedge, which can be compared to a time-varying tax on labor income, interferes in the choice between consumption and leisure. All else equal, an increase in this implicit tax leads to a decrease in labor input. Similarly, the investment wedge can be compared to a tax on investment. The productivity wedge simply captures variations in total factor productivity (relative to a trend, see below).

21. The actual wedges are derived from the model and the data. The labor wedge is calculated from the consumption-leisure condition and the investment wedge is calculated from the intertemporal consumption condition. The productivity wedge is computed from a constant returns to scale Cobb-Douglas production function. The labor and investment wedges are normalized to one in 1999. All variables (except labor) are detrended by a labor productivity trend, assumed to be 2 percent per year (corresponding roughly to productivity growth in the more dynamic OECD countries). Hence, the productivity wedge shows the progress in productivity relative to this trend.

22. Figure 1 shows the evolution of the three main wedges during the period 1999-2004. For the labor and investment wedges, an increase indicates a decline in the respective distortions. The productivity wedge is normalized to one in 1999 in the figure, for presentational reasons. The results suggest that labor market frictions have decreased during recent years, whereas investment frictions have increased.¹⁰ Furthermore, there was a sharp

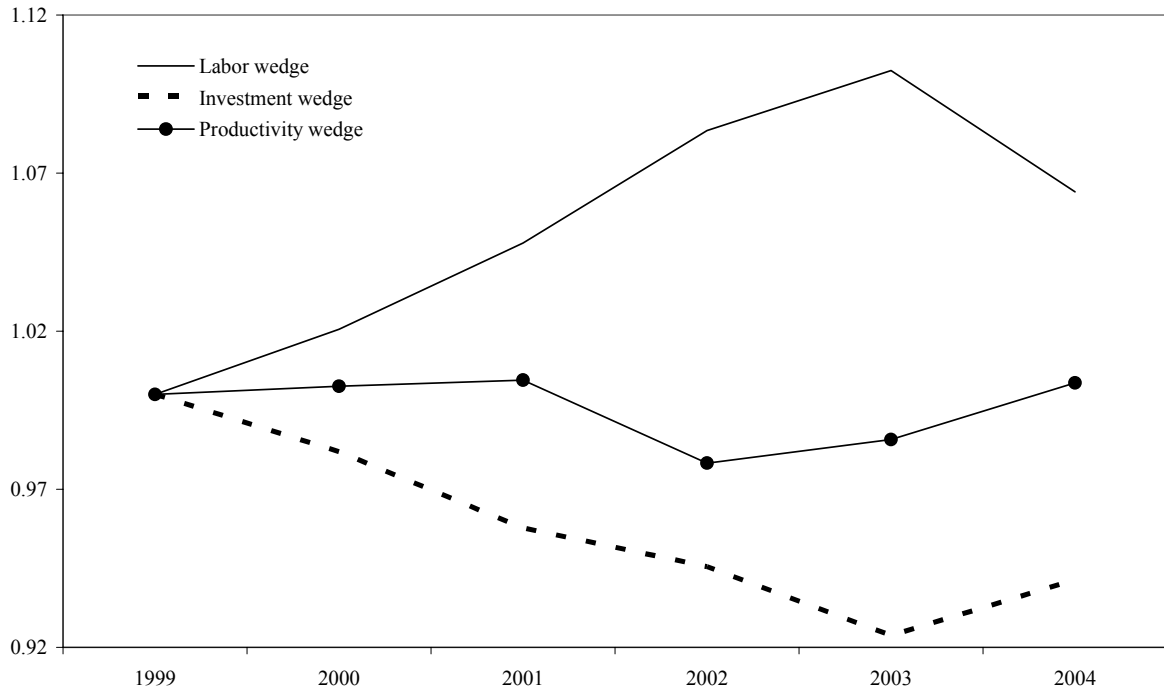
⁸ Chari, V., P. Kehoe, and E. McGrattan (2004), “Business Cycle Accounting”, Federal Reserves Bank of Minneapolis Staff Report No. 328.

⁹ The model also contains an ‘income accounting’ wedge (see appendix), but this wedge turns out to be relatively unimportant quantitatively and will thus not be discussed further.

¹⁰ The partial reversal of both wedges in 2004 may simply be an issue of the data, which are still preliminary. What is important, however, is the general tendency, rather than one particular data point.

decline in productivity in 2002, reflecting the shock to the tourism industry following the Djerba bombings that year, and a drought with a significant impact on agricultural production. Productivity quickly recovered from these shocks.

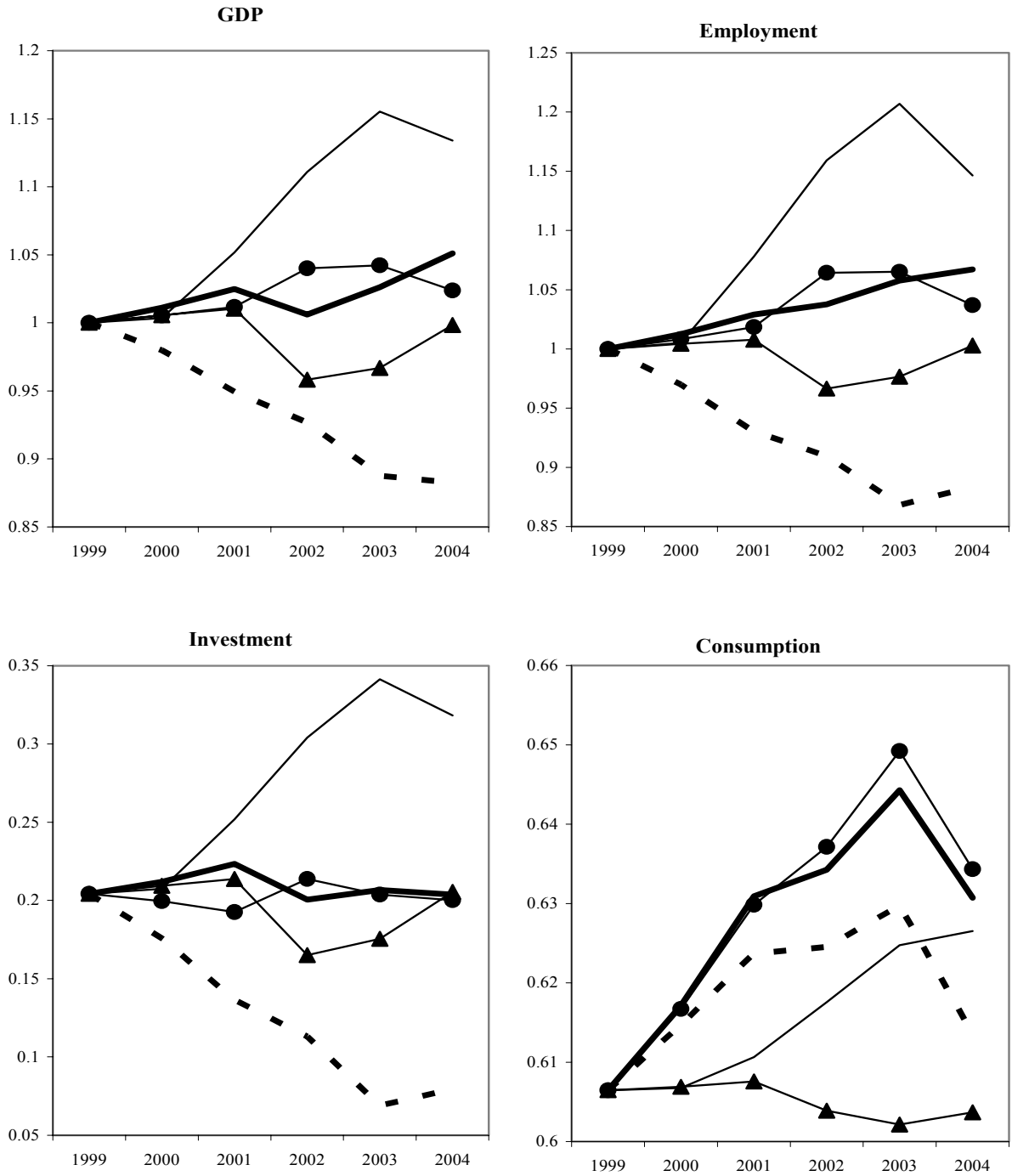
Figure 1. Tunisia: Wedges



23. Note, however, that it is not the wedges themselves that are important but their impact on the general equilibrium. To assess this impact, the wedges are fed into the model one by one, and in combination. Accordingly, to measure the effect of, say, the labor wedge, the model is run with all other wedges fixed at their 1999 values. By definition, if all wedges are included simultaneously, the model returns the actual data.

24. Figure 2 suggests that GDP, employment, and investment have received a significant boost from reduced frictions in the labor market. This positive impact seems to have been offset, to a large extent, by increased investment frictions. While productivity has also played a role – especially around 2002 – its aggregate impact has been less important. Both the labor and the investment wedge contributed to driving up consumption during the period in review, albeit within different dynamics. In the scenario with only the labor wedge, labor input and income increase significantly, permitting an increase in both consumption and investment. By contrast, in the model including only the investment wedge, the increase in consumption leaves increasingly fewer resources for investment, discourages labor, and dampens growth.

Figure 2. Tunisia: Equilibrium Impact of Wedges



Source: IMF staff calculations

Note: Per capita, detrended values, except employment (per capita labor input). Investment and consumption scaled by 1999 GDP.

— Model with labor wedge
 - - - Model with investment wedge
 —▲— Model with productivity wedge
 —●— Model with labor and investment wedges
 — Actual data

25. It is important to keep in mind that the model cannot identify the precise nature of the wedges. In fact, Chari, Kehoe, and McGrattan (2004) demonstrate that this model is equivalent to a wide range of models including, e.g., sticky wages and monetary shocks or unions (a labor wedge), or credit market frictions for investment (an investment wedge). Indeed, any frictions in the labor market or in the investment environment will show up as wedges. Hence, a degree of caution is warranted when interpreting the results. The point of the analysis is to determine which broad class of distortions have played the greatest role for growth, employment, investment, and consumption. The results can also serve as guidance for the appropriate direction of a more detailed analysis. Moreover, the exact magnitude of the outcome in the various scenarios should evidently not be given too much weight. What is important is the overall broad picture.

26. In Tunisia's case, it appears that something positive is happening in the labor market, not matched by similar improvements in the area of investments. The former is consistent with recent efforts to liberalize the labor market, although other factors may also have played a role. The deterioration in the investment wedge is harder to explain. It is conceivable that stricter lending rules by banks, in conjunction with intensified global competition in Tunisia has led to a more cautious investment behavior. The effects of recent shocks to tourism may also still linger. Other possible explanations include insufficient improvement in the business climate, and a less than fully effective investment promotion policy. Regarding the latter, investment incentives given to certain sectors and regions have resulted in an increasingly complex tax system, sometimes accompanied by administrative measures that have had an adverse effect on investment. Tunisia has only recently begun reforms in this area.

C. Conclusions

27. Tunisia's recent strong economic performance appears to have been driven by improvements in the labor market, partially offset by increased investment frictions. Keeping in mind the caveats regarding the model's inability to pinpoint the exact nature of frictions, one could draw the following tentative conclusions, relevant for Tunisia's growth strategy going forward:

- Recent efforts to increase labor market flexibility and improve matching between employers and job-seekers appear to have yielded positive results. This supports the idea that further labor market liberalization would be beneficial for employment in the medium term.
- Meanwhile, increased investment frictions underscores the importance of improving the investment climate and reducing the cost of doing business in Tunisia. Furthermore, it raises the question whether the government should reconsider its active investment promotion policies, including by scaling back tax incentives.

D. Appendix: Description of the Model

28. In a perfect foresight environment, consumers choose consumption, labor input, and investment to maximize utility $\sum_{t=1}^{\infty} \beta^t [\log c_t + \Psi \log(\bar{l} - l_t)] N_t$ subject to $c_t + (1 + \tau_{kt})[(1 + \eta)k_{t+1} - (1 - \delta)k_t] + x_t \leq (1 - \tau_{lt})w_t l_t + r_t k_t - T_t$,

where, c is consumption, \bar{l} a maximum allocation of time for work (set to 5000 hours per year), l hours worked, k the beginning-period capital stock, x net exports (all in per-capita terms), N the population, $1/(1 + \tau_k)$ the investment wedge, $(1 - \tau_l)$ the labor wedge, T lump sum taxes, w the wage, r the rental rate for capital, β the discount factor, η the population growth rate (set to 1.5 percent), and δ the depreciation rate (5 percent). Note that the terms in square brackets in the budget constraint is per-capita investment.

29. The labor and investment wedges represent any distortion in the labor market or investment environment, respectively. The former resembles a tax on labor income, while the latter is represented as an additional cost of investment (as in Chari, Kehoe, and McGrattan, 2004), which can be thought of as administrative costs of undertaking an investment. However, this interpretation of the investment wedge should not be taken literally. In fact, specifying the investment wedge as an implicit tax on capital income yields very similar results.

30. Firms' production function is $y_t = A_t k_t^\alpha ((1 + \gamma)^t l_t)^{1-\alpha}$, where γ represents a labor productivity growth trend. Firms choose labor and capital in order to maximize profits $A_t k_t^\alpha ((1 + \gamma)^t l_t)^{1-\alpha} - r_t k_t - w_t l_t$ in each period.

31. All variables (except labor) are detrended by the labor productivity trend, assumed to be 2 percent per year, corresponding roughly to productivity growth in the more dynamic OECD countries. Hence, an increase (decline) in a detrended variable can be interpreted as Tunisia converging toward (diverging from) emerging OECD economies. Detrended per capita variables are written and defined as $\hat{z}_t = \frac{z_t}{(1 + \gamma)^t}$.

32. Equilibrium is defined by consumers' and firms' first-order conditions, the production function, and a resource constraints as follows:

$$\frac{\hat{c}_t}{\bar{l} - l_t} \Psi = \hat{w}_t (1 - \tau_{lt}) \quad (1)$$

$$\frac{\hat{c}_{t+1}}{\hat{c}_t} = \frac{\beta}{1 + \tau_{kt}} [(1 - \delta)(1 + \tau_{kt+1}) + r_{t+1}] \frac{1}{1 + \gamma} \quad (2)$$

$$k_t = \alpha \frac{\hat{y}_t}{\hat{k}_t} \quad (3)$$

$$\hat{w}_t = (1 - \alpha) \frac{\hat{y}_t}{l_t} \quad (4)$$

$$\hat{y}_t = A_t \hat{k}_t^\alpha l_t^{1-\alpha} \quad (5)$$

$$\hat{c}_t + (1 + \eta)(1 + \gamma)\hat{k}_{t+1} - (1 - \delta)\hat{k}_t + \hat{g}_t + \hat{x}_t = \hat{y}_t \quad (6)$$

where \hat{g} is detrended per-capita government spending. The sum of \hat{g} and \hat{x} can be thought of as an ‘income accounting’ wedge between GDP on one hand and consumptions and investment on the other.

Calibration

33. In this deterministic version of the model, the labor, investment, and productivity wedges can be derived directly from equations (1), (2), and (5), respectively. The income accounting wedge is taken directly from the data. The model is calibrated such that 1999 corresponds to the steady state. In this regard, the notion of steady state should not be taken literally but rather be thought of as a benchmark, convenient for distinguishing the impact of the various wedges. The labor and investment wedges are normalized to 1 (i.e. τ_l and τ_k are zero) in the steady state. Moreover, since all variables are constant in the steady state, equations (1) and (2) become (with SS indicating steady state):

$$\frac{\hat{c}_{ss}}{\bar{l} - l_{ss}} \Psi = (1 - \alpha) \frac{\hat{y}_{ss}}{l_{ss}} \quad (1:SS)$$

$$1 = \beta \left[(1 - \delta) + \alpha \frac{\hat{y}_{ss}}{\hat{k}_{ss}} \right] \frac{1}{1 + \gamma} \quad (2:SS)$$

34. Furthermore, the law of motion $\hat{k}_{t+1} = \frac{(1 - \delta)\hat{k}_t + \hat{i}_t}{(1 + \eta)(1 + \gamma)}$ yields the steady state capital-GDP ratio, where \hat{i} is detrended per-capita investment:

$$\frac{\hat{y}_{ss}}{\hat{k}_{ss}} = [\gamma + \gamma\eta + \eta + \delta] \frac{\hat{i}_{ss}}{\hat{y}_{ss}} \quad (7)$$

35. These three steady state conditions, together with consumption, GDP and labor data from 1999 are used to calibrate the values of the discount factor (β), and the consumption-leisure parameter (Ψ). Actual hours worked are not available; instead it is assumed that all employed workers work 40 hours per week. As a consequence, changes in labor input are seen only as changes in employment and misses variations in hours per worker. This is likely to be a reasonable first approximation, however. The initial (1999) capital stock is set to

satisfy the steady state capital/GDP ratio, and subsequently follows the law of motion above. Accordingly, the calibration yields a β of 0.94, a Ψ of 9.4, and a steady state capital-GDP ratio of 2.4.